BLACKWATER CREEK RETAINING WALL

CITY OF LYNCHBURG, VIRGINIA

FEBRUARY 20, 2014

COMPREHENSIVE CONSTRUCTION SERVICES, INC.

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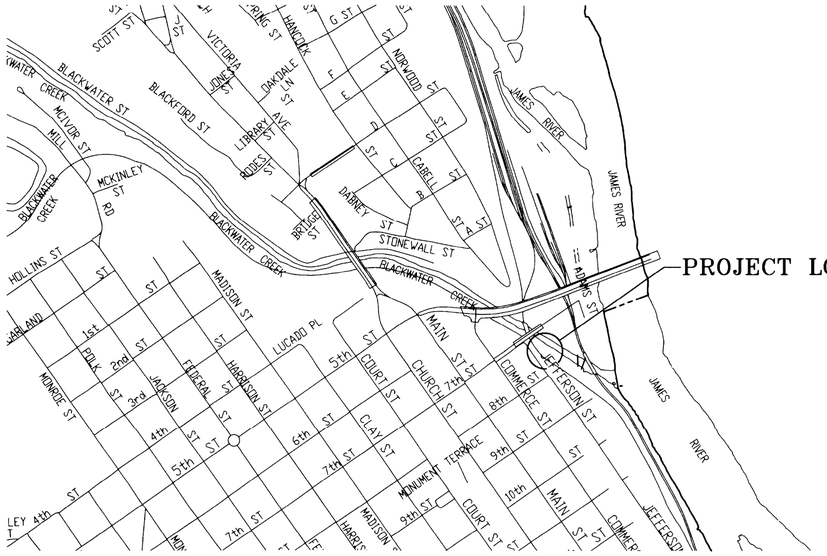

PROJECT LOCATION MAP

CITY OF LYNCHBURG PROJECT INFORMATION:

CITY PROJECT NO. T0162
CITY ENGINEERING PROJECT NO. 09046-M

APPROVED BY:

Thomas Conner, PE
OWNER

21 FEBRUARY 2014
ESC PLAN APPROVAL

ALL PROJECT PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH AASHTO STANDARDS.

CERTIFIED BY:

Nick A Brash Feb 20, 2014
NICK A. BRASH, P.E.
VA LICENSE NO. 15110

EROSION AND SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO REPAIR PORTIONS OF FAILED RETAINING WALL, STABILIZE VARIOUS SECTIONS AND PROVIDE DRAINAGE STRUCTURES TO PREVENT WATER INFILTRATION INTO THE INTERIOR OF THE WALL. THE WALL CURRENTLY SUPPORTS FILL MATERIAL ON WHICH A SKATE PARK AND OLD RAILROAD SIGNAL STRUCTURE IS CONSTRUCTED.
2. EXISTING SITE: THE SITE IS LOCATED ALONG THE WEST SIDE OF BLACKWATER CREEK BETWEEN 7TH AND 8TH STREETS, LYNCHBURG, VA 24501. THE UPPER PORTION OF THE WALL IS OCCUPIED BY A SMALL BRICK STRUCTURE ONCE USED TO SIGNAL RAILROAD CARS AND A SKATE PARK. THE LOWER SIDE OF THE WALL IS WITHIN BLACKWATER CREEK FOR THE UPSTREAM HALF OF THE WALL AND THE BOTTOM OF THE WALL RESTS ON A SLOPED EMBANKMENT APPROXIMATELY 10 FEET ABOVE THE WATER SURFACE.
3. ADJACENT PROPERTIES: THE PROPERTY ON WHICH THIS PROJECT IS LOCATED IS OWNED BY AMAZEMENT SQUARE AND IS BOUNDED BY PROPERTIES OWNED BY THE CITY OF LYNCHBURG, NORFOLK AND WESTERN RAILWAY AND VIRGINIA HOLDING CORPORATION. THE AREA IS A FORMER RAILWAY SWITCH YARD NOW USED BY THE PUBLIC.
4. OFF-SITE AREAS: UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE AND DISPOSED OF IN AN APPROVED MANNER. THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION AND SEDIMENT CONTROL PLAN TO THE EROSION AND SEDIMENT PERMIT OFFICE PERTAINING TO ANY NECESSARY DISTURBED AREAS OR ON-SITE DISTURBED AREA OUTSIDE THE LIMITS OF CLEARING SHOWN ON THESE PLANS, SUCH AS BORROW PITS, STOCKPILES, STAGING AREA, AND SPOIL AREAS THAT MAY BE USED FOR THIS PROJECT.
5. THE EXISTING BACKFILL MATERIAL BEHIND THE WALL CONSISTS OF LOOSE MICACEOUS SILTY SAND AND CLAYEY SAND.
6. CRITICAL AREAS: CARE SHALL BE TAKEN TO STABILIZE ALL SLOPES AND PREVENT EROSION AND TO PREVENT ANY DISCHARGE OF UNCURED CEMENT MIXTURES INTO BLACKWATER CREEK. CARE SHALL ALSO BE TAKEN TO MINIMIZE THE TRANSPORT OF SEDIMENT ONTO ADJOINING PROPERTIES.
7. TOTAL SQUARE FOOTAGE OF DISTURBED AREA FOR THIS PROJECT IS LESS THAN 4000 SQ FT.
8. EROSION AND SEDIMENT CONTROL MEASURES: ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED BY THE CONTRACTOR IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. SYMBOLS, DETAIL AND DIMENSIONS USED ARE TAKEN FROM THE HANDBOOK.

A. STRUCTURAL PRACTICES:
   1. TEMPORARY STONE CONSTRUCTION ENTRANCE WILL NOT BE REQUIRED.
   2. SILT FENCE (SF) SPEC 3.05 SILT FENCE: SILT FENCE BARRIERS SHALL BE PROVIDED WHERE SHOWN ANS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE.

B. VEGETATIVE PRACTICES:
   1. TEMPORARY SEEDING (TS) , SPEC 3.31: TEMPORARY SEEDING SHALL BE PROVIDED AS SHOWN ON THE SEEDING SCHEDULE FOR ALL DISTURBED AREAS.
   2. PERMANENT SEEDING (PS): SPEC. 3.32: PERMANENT SEEDING SHALL BE PROVIDED AS SHOWN ON THE SEEDING SCHEDULE FOR ALL DISTURBED AREAS.

C. MANAGEMENT STRATEGIES:
   1. CONSTRUCTION SHALL BE PLANNED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS SOON AS POSSIBLE.
   2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE. ANY SOIL STOCKPILES SHALL BE TEMPORARILY SEEDED AFTER COMPLETION OF STRIPPING AND BE PROVIDED WITH SILT FENCES ON THE LOWER SIDE OF THE STOCKPILE.
   3. EROSION AND CONTROL PRACTICES SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO PROCEEDING WITH CONSTRUCTION ACTIVITIES. MEASURES SHALL BE SEEDED AND STRAW MULCHED IMMEDIATELY AFTER INSTALLATION.
   4. DISTURBED AREAS ON ANY PORTION OF THE SITE SHALL RECEIVE TEMPORARY OR PERMANENT SEEDING WITHIN SEVEN DAYS AFTER FINAL GRADE IS ESTABLISHED. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DISTURBED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS.
   5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
   6. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES IMMEDIATELY AFTER INSTALLATION.
   7. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE, AND WILL INHIBIT EROSION.
   8. CUT AND FILL SLOPES FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITH AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME, OR SLOPE DRAIN STRUCTURE. WHENEVER WATER SEEPS FRO A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
   9. WHERE CONSTRUCTION VEHICLES USE PAVED OR PUBLIC ROADS. PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRAFFIC.
   10. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WHEN THE TEMPORARY MEASURES ARE NO LONGER NEEDED, OR WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY.

D. MAINTENANCE: ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE MAINTAINED, INSPECTED, AND REPAIRED AS NEEDED TO ENSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL EROSION AND CONTROL MEASURES SHALL BE CHECKED AT THE END OF EACH DAY AND AFTER EVERY RAINFALL EVENT.
   1. DAMAGE TO EROSION CONTROL MEASURES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
   2. MAINTAIN ALL SEEDED AREAS UNTIL A UNIFORM STAND IS ACCEPTED.
   3. PROVIDE FOR EQUIPMENT WASHING AS NEEDED TO PREVENT THE TRANSPORT OF SOIL ONTO EXISTING ASPHALT ROADWAYS. ANY SEDIMENT ON THE PAVEMENT SHALL BE REMOVED IMMEDIATELY
   4. AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT FILL EROSION SHALL BE RE-SEEDED AS SOON AS AREAS ARE IDENTIFIED.

E. SEQUENCE OF CONSTRUCTION
   1. NO WORK IS TO BE COMPLETED ON THE CREEK SIDE OF THE WALL WHEN WATER SURFACE DEPTH IS GREATER THAN 1'-0" AT STATION 280.
   2. INSTALL SILT FENCE AS SHOW ON THE DRAWINGS.
   3. CLEAR AND GRUB VEGETATION FROM THE WALL SURFACE FOR THE ENTIRE 474 FEET OF WALL. REMOVE DEBRIS FROM THE SITE AND DO NOT ALLOW IT TO FLOAT DOWN BLACKWATER CREEK.
   4. REMOVE EXISTING FENCING AS REQUIRED IN STAGES TO ACCESS THE AREAS WHERE REPAIRS TO THE WALL ARE TO BE MADE. PROVIDE TEMPORARY BARRIERS THROUGHOUT THE PROCESS TO PREVENT ACCESS TO THE SITE BY THE PUBLIC. MINIMUM BARRIERS TO BE 6 FT TALL CHAIN LINK FENCE WITH POSTS SET 2'-0" IN 1'-0" DIA FOLLOWABLE FILL FOUNDATION OR 4 FT TALL CHAIN LINK FENCE SET WITHIN NEW JERSEY BARRIERS. POST SPACING TO BE A MAXIMUM OF 10 FT ON CENTER.
   5. EXCAVATE AREA BEHIND THE WALL AT THE 440 FOOT LOCATION AND INSTALL CONCRETE DEADMAN MATERIALS AS SHOWN ON THE DRAWING. ALLOW EACH LAYER OF CONCRETE TO CURE PRIOR TO PROCEEDING TO NEXT LEVEL TO ENSURE STABILITY OF THE WALL SECTION. ONCE CONCRETE DEADMAN MATERIALS ARE COMPLETE, BACKFILL AREA TO ORIGINAL GRADE USING MATERIALS REMOVED FROM THE SITE. COMPACTION TO BE 95% STANDARD PROCTOR.
   6. GROUT INTERIOR SECTIONS OF COLLAPSED AREA AT THE 440 FOOT LOCATION AS DIRECTED BY THE ENGINEER AND APPLY SHOTCRETE SURFACING AND BONDING MATERIALS AS SHOWN.
   7. EXCAVATE AREA BEHIND WALL AT THE 150 FOOT LOCATION TO TOP OF DRAIN THAT EXITS WALL AT THAT LOCATION. (APPROXIMATELY 7 FEET BELOW THE SURFACE) SEAL OPENING AS SHOWN AND INSTALL FLOWABLE FILL IN VOIDS AND OVER AREA A MINIMUM OF 4 FEET EACH SIDE OF DRAIN TO PREVENT INFILTRATION OF WATER INTO DRAIN. COMPACT AND GRADE AREA AND CONSTRUCT NEW DRAINAGE DITCH. REINSTALL FENCE IN REVISED LOCATION.
   8. RELOCATE FENCE AT UPSTREAM SIDE OF OLD RAILROAD STRUCTURE, PROVIDE TEMPORARY BARRIERS AND CONSTRUCT DRAINAGE DITCH AND BERM. REINSTALL FENCE IN REVISED LOCATION.
   9. SEAL OLD SEWER DISCHARGE OPENING AT THE 420 FOOT LOCATION AS SHOWN ON THE DRAWINGS.
   10. EROSION CONTROL DEVICES MUST REMAIN IN PLACE UNTIL RELEASED BY THE EROSION CONTROL INSPECTOR.
   11. GRADE AND VERIFY FINAL GRADES, REMOVE ANY SILT FENCE REMAINING ON THE SITE. SEED AND MULCH AREAS AFTER FENCE REMOVAL.
   12. CLOSE OUT THE PROJECT.

F. MINIMUM STANDARDS: ALL APPLICABLE MINIMUM STANDARDS MUST BE ADDRESSED.
   1. STABILIZATION OF DENUDED AREAS: PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT REMAIN DORMANT OR UNDISTURBED FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
   2. STABILIZATION OF SOIL STOCKPILES: DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
   3. PERMANENT VEGETATIVE COVER: A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE E & S INSPECTOR, IS UNIFORM AND MATURE ENOUGH TO SURVIVE AND INHIBIT EROSION.
   4. TIMING AND STABILIZATION OF SILT TRAPPING MEASURES: SEDIMENT BASINS AND TRAPS, STORM INLET PROTECTION, SILT FENCING, PERIMETER DIKES, SEDIMENT BARRIERS, AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UP-SLOPE LAND DISTURBANCE TAKES PLACE.
   5. STABILIZATION OF EARTHEN STRUCTURES: STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
   6. SEDIMENT BASINS AND TRAPS: SEDIMENT TRAPS AND SEDIMENTS BASINS SHALL BE:
      A. CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 1354 CUBIC YARDS PER ACER OF DRAINAGE AREA AND SHALL CONTROL A DRAINAGE AREA OF LESS THAN THREE ACRES.
      B. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA, AND SHALL CONTROL A DRAINAGE AREA OF 3 ACRES OR GREATER. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
   7. CUT AND FILL SLOPES: CUT AND FILL SLOPES SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.
   8. CONCENTRATED RUNOFF DOWN CUT OR FILL SLOPES: CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITH AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME, OR SLOPE DRAIN STRUCTURE.
   9. WATER SEEPAGES FROM A SLOPE FACE: WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
   10. STORM SEWER INLET PROTECTION: ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION OR EXISTING STORM SEWERS THAT WILL RECEIVE WATER FROM THE PROJECT AREA SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
   11. STABILIZATION OF OUTLETS: BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
   12. WORK IN LIVE WATERCOURSES: WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT, AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NON- ERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NON-ERODIBLE COVER MATERIALS.
   13. CROSSING A LIVE WATERCOURSE: WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NON-ERODIBLE MATERIAL SHALL BE PROVIDED.
   14. APPLICABLE REGULATIONS: ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
   15. STABILIZATION OF BED AND BANKS: THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
   16. UNDERGROUND UTILITIES: UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS, IN ADDITION TO OTHER APPLICABLE CRITERIA:
      A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
      B. WHERE CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS, EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES, EXCEPT FOR ANY DIVERSION DITCHES.
      C. EFFLUENT FROM DE-WATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
      D. TRENCH BACKFILL MATERIAL SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
      E. RE-STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
      F. ALL APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH AT ALL TIMES.
   17. CONSTRUCTION ACCESS ROUTES: WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD, THE ROAD SURFACE SHALL BE CLEANED TH9UROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
   18. TEMPORARY E&S CONTROL MEASURE REMOVAL: ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL E&S AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
   19. ADEQUACY OF RECEIVING CHANNELS: PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY, AND PEAK FLOW RATES OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION.

8. OWNER RESPONSIBLE FOR MAINTENANCE AND IMPLEMENTATION IS THE "CITY OF LYNCHBURG, VIRGINIA".

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF LYNCHBURG MANUAL OF SPECIFICATIONS AND STANDARDS AND DETAILS, LATEST EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING UNDERGROUND UTILITIES DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL EXCAVATE AS REQUIRED TO IMPLEMENT THE PROJECT AND REMOVE ALL TOP SOIL, ORGANIC MATTER AND INSUFFICIENT BEARING MATERIAL
4. CONTRACTOR SHALL CONTACT MISS UTILITY TO HAVE UNDERGROUND UTILITIES MARKED A MINIMUM OF 48 HOURS PRIOR TO ANY GRADING OR EXCAVATION OPERATIONS.
5. THE CONTRACTOR SHALL REPAIR, STABILIZE, AND SEED ALL DENUDED AREAS DISTURBED BY CONSTRUCTION. PROVIDE TEMPORARY AND PERMANENT SEEDING ON DENUDED AREAS PER CITY OF LYNCHBURG STANDARD SPECIFICATIONS.
6. SOIL AMENDMENTS SHALL COMPLY WITH VIRGINIA EROSION AND SEDIMENTATION HANDBOOK AND SPECIFICATIONS FOR TEMPORARY AND PERMANENT SEEDING (SECTIONS 3.31 AND 3.32).
7. ALL EROSION CONTROL/STORMWATER MANAGEMENT MEASURES MUST BE DE-WATERED PRIOR TO RELEASE OF RETAINAGE AND ALL TEMPORARY EROSION CONTROL MEASURES MUST BE REMOVED WITHIN 30 DAYS OF PERMANENT STABILIZATION OF THE SITE.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING. BUT NOT LIMITED TO, OFF SITE BORROW OR WASTE AREAS AND MATERIAL LAY-DOWN AEAS). THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE CITY OF LYNCHBURG, VIRGINIA.

ES-7: ALL DISTURBED AREAS (INCLUDING DISPOSAL AREAS) ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS. WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

ES-10: THE CONTRACTOR SHALL OBTAIN A VIRGINIA STORM WATER MANAGEMENT PERMIT (VSMP) FOR CONSTRUCTION DISCHARGES. A STORM WATER POLLUTION PREVENTION PLAN SHALL BE A COMPONANT OF THIS PERMIT. THE VSMP AND THE SWPPP SHALL BE ALL INCLUSIVE OF ALL REGULATED ACTIVITIES ASSOCIATED WITH THE PROJECT.

ES-11: PERIMETER EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITY. AS CONSTRUCTION PROCEEDS, ALL ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS SOON AS POSSIBLE. EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN ARE A MINIMUM AND THE PROJECT CONDITION MAY DICTATE ADDITIONAL CONTROL. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PER THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

ES-12: THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES FOR THE DURATION OF THE PROJECT. ALL EROS/ON AND SEDIMENT CONTROL DEVICES SHALL BE CHECKED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL TO INSURE THAT ALL DEVICES ARE IN PLACE AND FUNCTIONING AS REQUIRED. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE MAINTAINED PER THE LATEST EDITION OF THE VIRGIN/A EROSION AND SEDIMENT CONTROL HANDBOOK. IN GENERAL, IF THE SILT BUILT UP BEHIND A BARRIER BECOMES AS DEEP AS 9 INCHES, THE SILT IS TO BE REMOVED AND THE BARRIER REPAIRED OR REPLACED. AFTER COMPLETION OF THE PROJECT AND PERMANENT SEEDING HAS BEEN ESTABLISHED, EROSION CONTROL DEVICES AND ANY SILT BUILT UP SHALL BE REMOVED. DISTURBED AREAS DUE TO THIS CLEANUP OPERATION SHALL BE REPAIRED. RESEEDED AND REMULCHED.

EROSION CONTROL BLANKETS (ECB)

1. EROSION CONTROL BLANKET SHALL BE LANDLOK S1 OR EQUAL AND CONSIST OF 100% WHEAT STRAW MECHANICALLY BOUND AND COVERED ON ONE SIDE BY NETTING. THE STRAW IS TO BE HOMOGENEOUSLY BLENDED AND EVENLY DISTRIBUTED THROUGHOUT THE BLANKET. THE NETTING IS TO BE PHOTODEGRADABLE POLYPROPYLENE WITH MESH OPENINGS OF APPROXIMATELY 3/8 IN. BY 3/8 IN. THE BLANKET IS TO BE SEWN ON APPROXIMATELY 2 IN CENTERS WITH PHOTODEGRADABLE POLYPROPYLENE THREAD. THIS PRODUCT IS TO BE NTPEP APPROVED FOR AASHTO STANDARDS.
2. ECB SHALL BE INSTALLED BETWEEN NEWLY INSTALLED CONCRETE DRAINAGE DITCHES AND TOP OF RETAINING WALL. IN ADDITION, INSTALL ECB ALONG TOP OF WALL AT WEST END OF PROJECT AREA FROM EDGE OF SKATE PARK TO END OF RETAINING WALL INCLUDING RETURN SECTION OF WALL. ECB TO EXTEND A MINIMUM OF 5 FEET BEYOND FACE OF RETAINING WALL.

EROSION CONTROL BLANKET (ECB) GENERAL INSTALLATION GUIDELINES

A. SITE PREPARATION
   1. GRADE AND COMPACT AREA OF EROSION CONTROL BLANKET (ECB) INSTALLATION AS DIRECTED AND APPROVED BY ENGINEER. SUBGRADE SHALL BE UNIFORM AND SMOOTH. REMOVE ALL ROCKS, CLODS, VEGETATION OR OTHER OBJECTS SO TH INSTALLED ECB WILL HAVE DIRECT CONTACT WITH SOIL SURFACE.
   2. PREPARE SEEDBED BY LOOSENING THE TOP 2-3 IN (50-75 MM) MINIMUM OF SOIL. THIS MAY BE ACCOMPLISHED WITH A ROTARY TILLER ON SLOPES 3:1 OR FLATTER.
   3. DO NOT MULCH AREAS WHERE MAT IS TO BE PLACED.

B. SEEDING
   1. KEEP SEEDED AREAS MOIST AS NECESSARY TO ESTABLISH VEGETATION. WHEN WATERING SEEDED AREAS, USE FINE SPRAY TO PREVENT EROSION OF SEEDS OR SOIL. IF AS A RESULT OF A RAIN, PREPARED SEEDBED BECOMES CRUSTED OR ERODED, OR IF ERODED PLACES, RUTS OR DEPRESSIONS EXIST FOR ANY REASON, REWORK SOIL UNTIL SMOOTH AND RESEED SUCH AREAS.
   2. APPLY AN AMOUNT EQUIVALENT TO 50% OF THE TOTAL SEED MIXTURE REQUIRED TO BE INSTALLED ON THE SOIL SURFACE BEFORE INSTALLING THE ECB. DISTURBED AREAS SHALL BE RESEEDED. CONSULT PROJECT PLANS AND/OR SPECIFICATIONS FOR SEED TYPES AND APPLICATION RATES.

C. GENERAL INSTALLATION GUIDELINES
   1. PROVIDE FALL PROTECTION DEVICES SECURED TO APPROVED ANCHORS FOR ALL PERSONNEL WORKING ABOVE THE RETAINING WALL.
   2. EXCAVATE A TOP OF BANK (TOB) ANCHOR TRENCH 4 IN WIDE X 6 IN DEEP AT THE CREST OF THE EMBANKMENT OR ADJACENT TO NEW DRAINAGE DITCH.
   3. BEGINNING AT THE DOWNWIND END OF THE PREVAILING WINDS ON A SLOPE, PLACE ECB ROLL END INTO THE TOB ANCHOR TRENCH AND SECURE WITH SECURING PINS ON 2 FT CENTERS SECURE IN TRENCH IN SAME MANNER. BACKFILL AND COMPACT SOIL INTO TRENCH TO SECURE BLANKET IN PLACE.
   4. UNROLL ECB DOWN THE SLOPE.
   5. SECURE ECB LONGITUDINAL EDGE WITH SECURING PINS ON 12 IN CENTERS.
   6. CONTINUE INSTALLATION AS DESCRIBED ABOVE, OVERLAPPING ADJACENT ROLLS AS FOLLOWS:
      a. ECB ROLL EDGE OVERLAP: 3 INCH MINIMUM OVERLAP WITH UPSLOPE ECB ON TOP. SECURE WITH ONE ROW OF SECURING PINS ON 12 INCH CENTERS.
      b. ECB ROLL END OVERLAP FOR SLOPES: 6 IN (150 MM) MINIMUM OVERLAP WITH UPSLOPE ECB ON TOP. SECURE WITH TWO ROWS OF SECURING PINS STAGGERED 6 IN APART ON 12 IN CENTERS
      c. SECURE ECB USING SECURING PINS. FOR APPROPRIATE FREQUENCY AND PATTERN, SEE THE TYPICAL PIN PATTERN DETAIL.
      d. EXCAVATE TOE OF SLOPE (TOS) ANCHOR TRENCH 4 IN WIDE X 6 IN DEEP. ANCHOR, BACKFILL AND COMPACT END OF ECB IN TERMINAL TRENCH.
   7. GROUND PINNING DEVICES
      a. METAL SECURING PINS SHOULD BE AT LEAST 0.20 IN DIAMETER STEEL WITH A 1 ½ IN STEEL WASHER AT THE HEAD OF THE PIN OR U SHAPED PINS OR EQUIVALENT LENGTH MAY BE USED. METAL PINS SHOULD BE DRIVEN FLUSH TO THE SOIL SURFACE. SECURING PINS SHOULD BE A MINIMUM OF 12 IN LONG AND HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT.
   8. VEGETATION ESTABLISHMENT
      a. IRRIGATE AS NECESSARY TO ESTABLISH AND MAINTAIN VEGETATION. FREQUENT, LIGHT IRRIGATION WILL NEED TO BE APPLIED TO SEEDED AREAS IF NO NATURAL RAIN EVENTS HAVE OCCURRED WITHIN TWO WEEKS OF SEEDING AND SHALL CONTINUE UNTIL 75% OF VEGETATION HAS ESTABLISHED AND HAS REACHED A HEIGHT OF 2 INCHES. DO NOT OVER IRRIGATE.
   9. CONTRACTORS MAINTENANCE AND GUARANTEE PERIOD
      a. IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO MAINTAIN ALL SEED AND ECB AREAS AFTER ENGINEER'S ACCEPTANCE. MAINTENANCE SHALL CONSIST OF WATERING AND WEEDING, REPAIR OF ALL EROSION AND ANY RE-SEEDING AS NECESSARY TO ESTABLISH A UNIFORM STAND OF THE SPECIFIED GRASSES. A MINIMUM OF 70% OF THE AREA SEED SHALL BE COVERED WITH NO VEGETATIVE DENSITY AND A MINIMUM GRASS GROWTH OF 4 INCHES.

REVISIONS

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA
EROSION AND SEDIMENT CONTROL NARRATIVE

COMMONWEALTH OF VIRGINIA
NICK A. BRASH
NO. 015110
Feb 20, 2014
PROFESSIONAL ENGINEER

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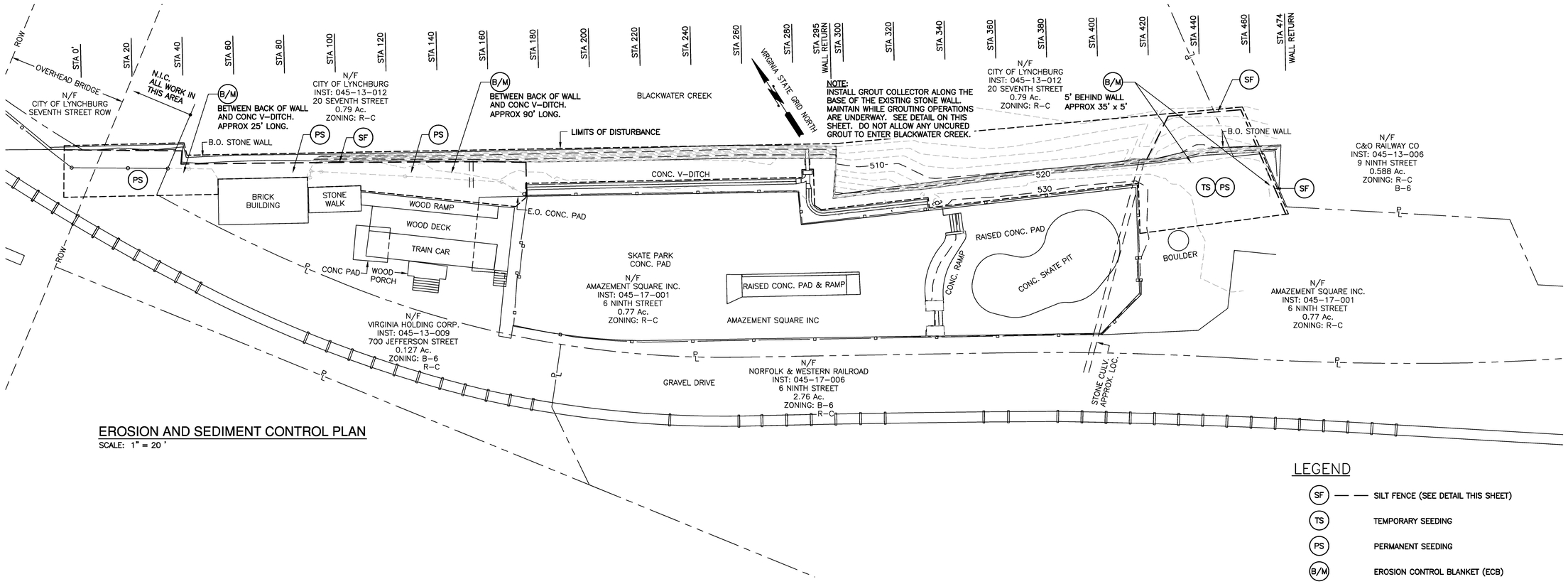
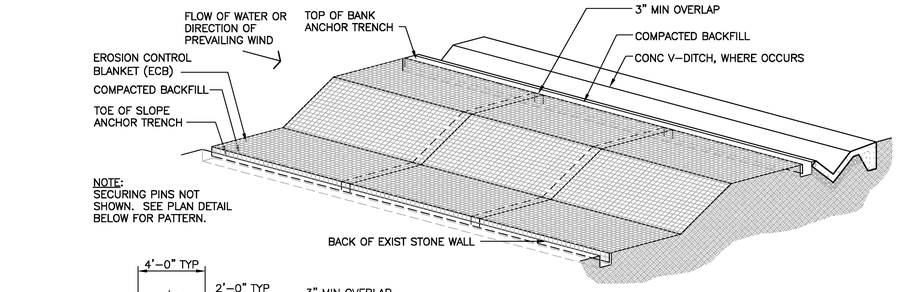
DESIGNED	NAB
DRAWN	RWR
CHECKED	NAB
PROJECT NUMBER	13.043
DATE	2/20/14
SCALE	AS NOTED
CADD-FILE	
SHEET	C1



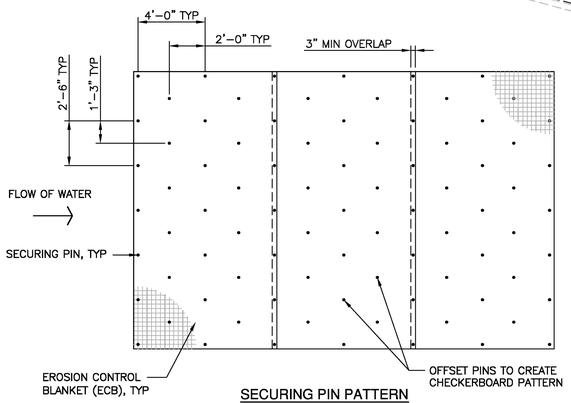
EROSION AND SEDIMENT CONTROL PLAN
SCALE: 1" = 20 '

LEGEND

- (SF) — — SILT FENCE (SEE DETAIL THIS SHEET)
- (TS) TEMPORARY SEEDING
- (PS) PERMANENT SEEDING
- (B/M) EROSION CONTROL BLANKET (ECB)
- – – – – LIMITS OF DISTURBANCE
- — — EXIST. CONTOUR LINE



NOTE:
SECURING PINS NOT SHOWN. SEE PLAN DETAIL BELOW FOR PATTERN.



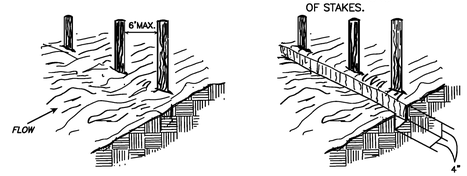
SECURING PIN PATTERN

NOTE:
SEE SHEET C1 FOR EROSION CONTROL BLANKET SPECIFICATIONS AND NOTES.

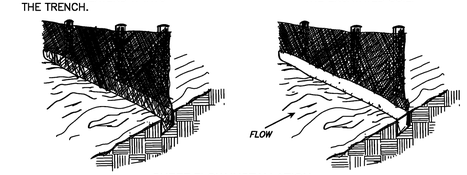
EROSION CONTROL BLANKET DETAIL
NO SCALE

CONSTRUCTION OF A SILT FENCE
(WITHOUT WIRE SUPPORT)

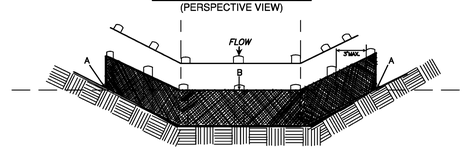
1. SET THE STAKES.
2. EXCAVATE A 4"X 4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



3. STAPLE FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



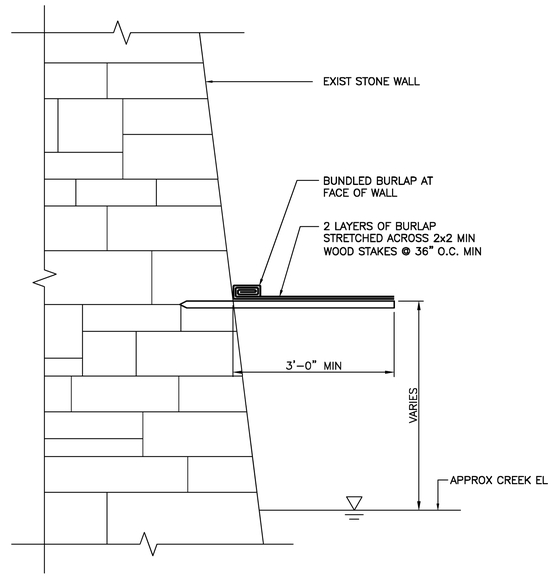
SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.

DRAINAGEWAY INSTALLATION
(FRONT ELEVATION)

SILT FENCE DETAIL
NO SCALE



GROUT COLLECTOR DETAIL
NO SCALE

REVISIONS

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA

EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

COMMONWEALTH OF VIRGINIA
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Construction Services CCS Incorporated Comprehensive

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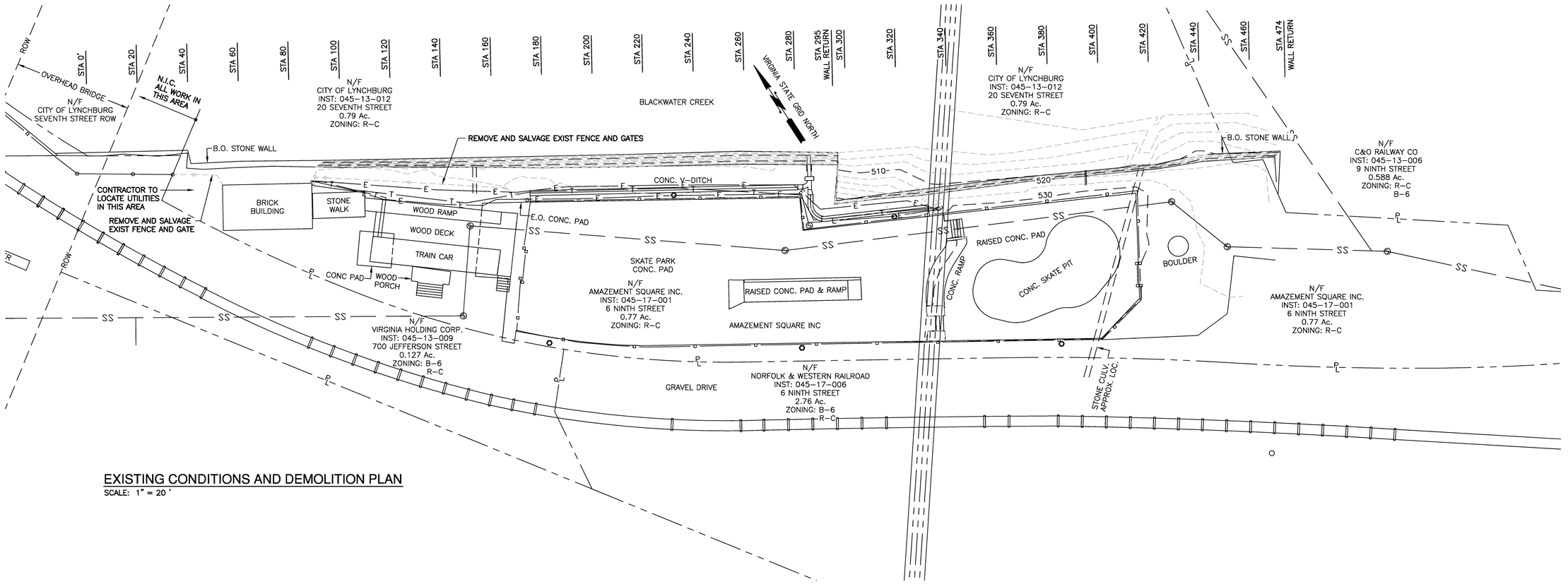
CADD-FILE	
SHEET	C2



EXISTING CONDITIONS AND DEMOLITION PLAN

SCALE: 1" = 20 '

REVISIONS

1	
2	
3	
4	

BLACKWATER CREEK RETAINING WALL

CITY OF LYNCHBURG, VIRGINIA

EXISTING CONDITIONS AND DEMOLITION PLAN

COMMONWEALTH OF VIRGINIA
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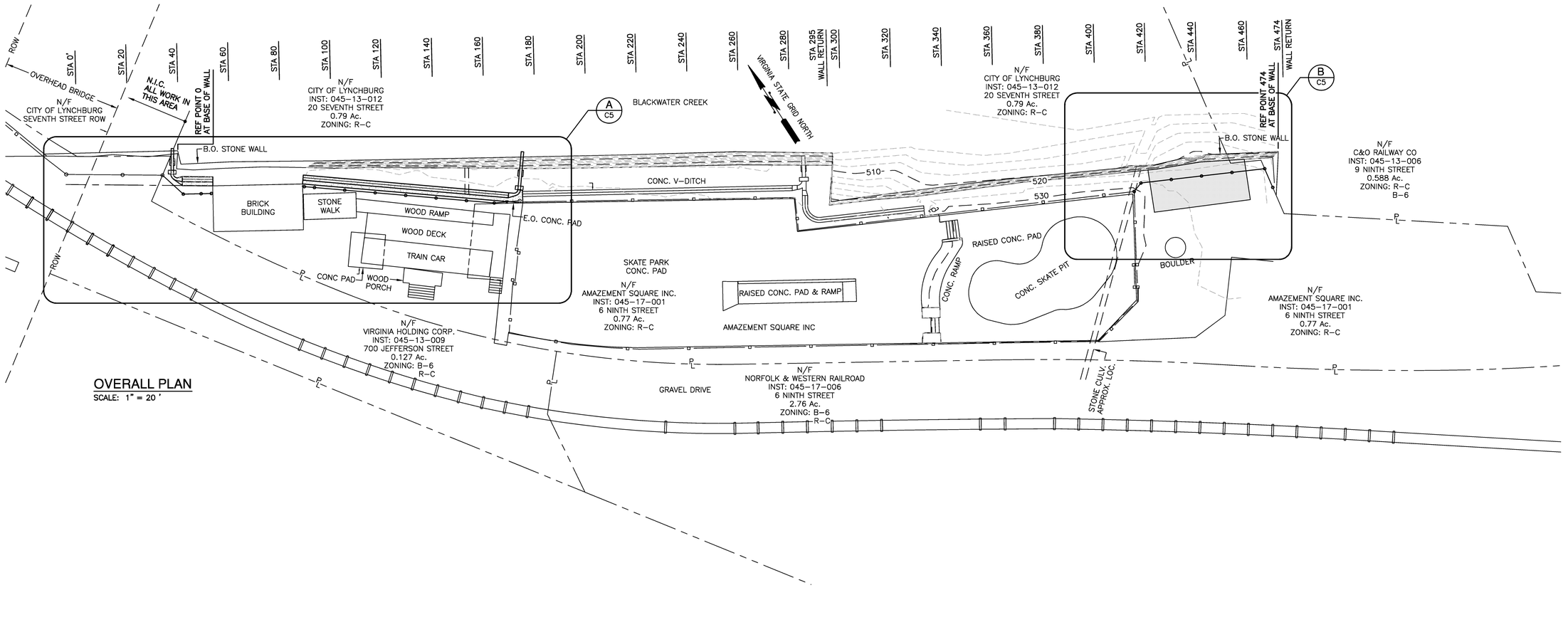
SHEET	C3



OVERALL PLAN
SCALE: 1" = 20 '

REVISIONS

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA

OVERALL PLAN

COMMONWEALTH OF VIRGINIA
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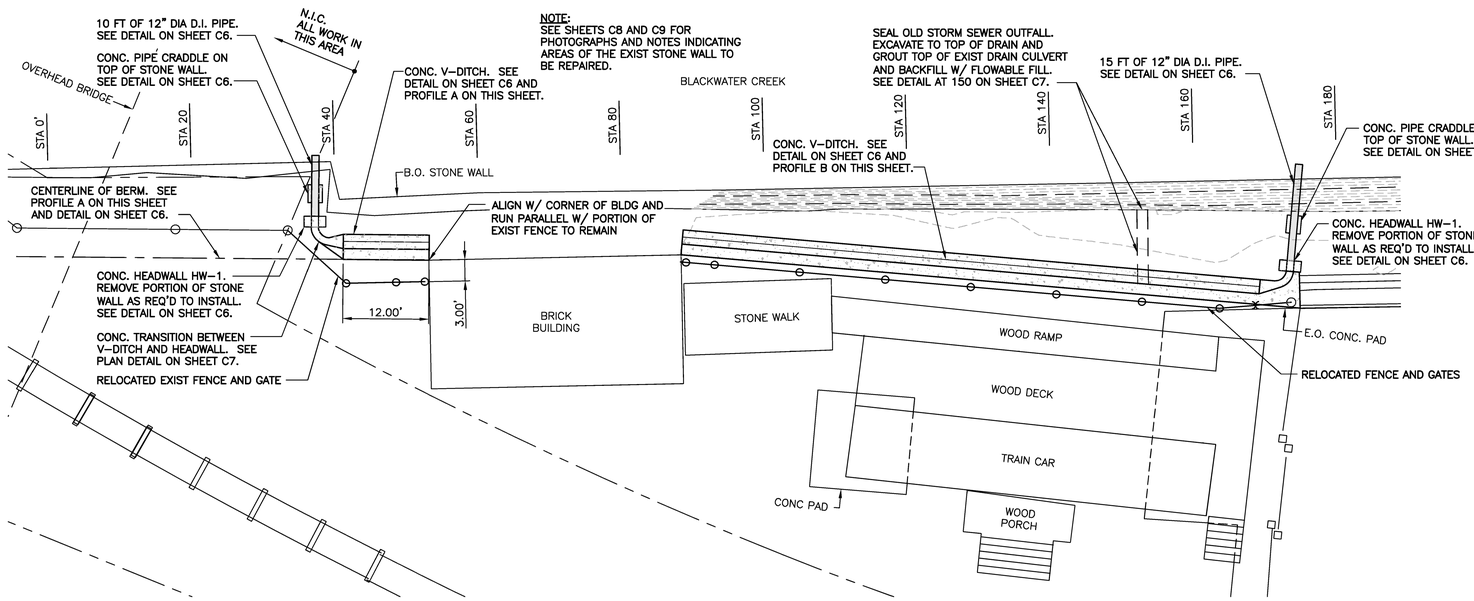
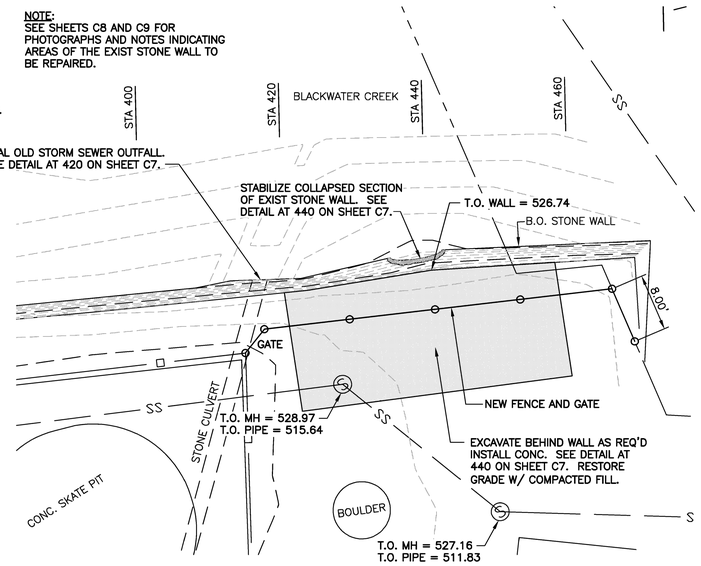


ENLARGED PLAN A
SCALE: 1" = 10'
C5

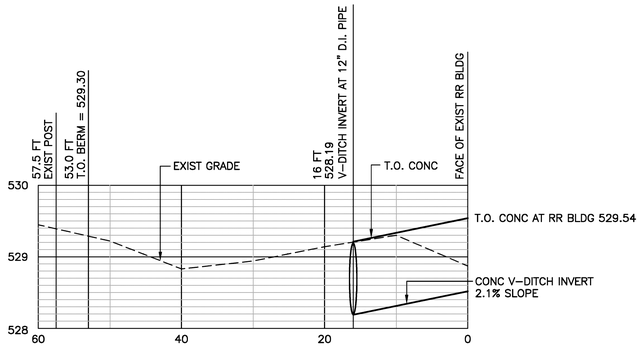
1" = 10'-0" 10' 5' 0 10' 20'



ENLARGED PLAN B
SCALE: 1" = 10'
C4

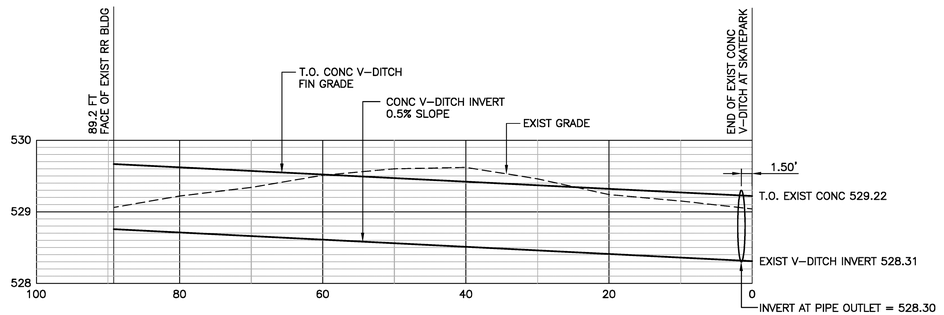
1" = 10'-0" 10' 5' 0 10' 20'

NOTE:
THE CONTRACTOR SHALL COORDINATE WITH THE CONSTRUCTION INSPECTOR, DERICK CUSTIS AT 434-455-4253, FOR AN INSPECTION OF THE SANITARY SEWER MANHOLE BEFORE AND DURING THE EXCAVATION PORTION OF THE WORK, AND ANOTHER INSPECTION BEFORE THE BACKFILL OPERATION COMMENCES.



PROFILE A - UPSTREAM SIDE OF EXISTING RAILROAD BUILDING
SCALE:
HORIZ: 1" = 10 FT
VERT: 1" = 1 FT

NOTE:
CONSTRUCT BERM BETWEEN 19 FT AND 50 FT AS SHOWN TO DIRECT SURFACE WATER TO DRAIN.



PROFILE B - DOWNSTREAM SIDE OF EXISTING RAILROAD BUILDING
SCALE:
HORIZ: 1" = 10 FT
VERT: 1" = 1 FT

REVISIONS

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA
ENLARGED PLANS

COMMONWEALTH OF VIRGINIA
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Feb 20, 2014
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SHEET	C5

SHOTCRETE SPECIFICATION

SCOPE: THE WORK SHALL CONSIST OF FURNISHING, MIXING, APPLYING AND CURING SHOTCRETE AS SHOWN ON THE DRAWINGS. EITHER A DRY MIX OR WET MIX PROCESS MAY BE USED. THE FINAL FINISH IS TO BE A FLOAT FINISH.

MATERIALS:

A. PORTLAND CEMENT SHALL MEET REQUIREMENTS OF ASTM C 150 TYPE I OR TYPE II.

B. A MINIMUM OF 50% OF THE FINE AGGREGATE SHALL BE NATURAL SAND.

C. MINIMUM CEMENTITIOUS MATERIALS CONTENT SHALL BE 635 POUNDS PER CUBIC YARD FOR 4,000 PSI CONCRETE.

D. ADMIXTURES SHALL MEET THE REQUIREMENTS INDICATED. NON–CHLORIDE CHEMICAL ADMIXTURES SHALL CONFORM TO ASTM C 494. AIR–ENTRAINING ADMIXTURES SHALL CONFORM TO ASTM C 260. FLY ASH OR POZZOLANIC MATERIALS SHALL CONFORM TO ASTM C 618.

E. WATER USED IN MIXING OR CURING SHOTCRETE SHALL BE CLEAN AND FREE FROM INJURIOUS AMOUNTS OF OIL, SALT, ACID, ALKALI, ORGANIC MATTER OR OTHER DELETERIOUS SUBSTANCES.

QUALITY: SHOTCRETE SHALL BE UNIFORM AND DENSE, FREE FROM "DRUMMY" AREAS THAT INDICATE LAMINATIONS, VOIDS, SAND POCKETS, OR DISBANDED MATERIAL.

CONSISTENCY: THE PROPORTION OF WATER ADDED TO THE MIXTURE SHALL BE ACCURATELY CONTROLLED TO PRODUCE THOROUGH AND UNIFORM HYDRATION OF THE SHOTCRETE. THE CONSISTENCY OF THE SHOTCRETE SHALL BE SUCH THAT THE SURFACE OF THE SHOTCRETE IN PLACE SHALL HAVE A RICH, GLOSSY APPEARANCE AND THAT THE SHOTCRETE SHALL ADHERE TO THE SUPPORTING SURFACE WITHOUT FLOWING, SLUMPING OR SLOUGHING. FOR APPLICATION TO VERTICAL OR OVERHANGING SURFACES THE MIX PROPORTIONS SHALL BE ADJUSTED SO THAT THE PLACED SHOTCRETE WILL ADHERE TO A MINIMUM THICKNESS OF 3/4–INCH WITHOUT SAGGING OR SLOUGHING. FOR ADJUSTMENT OF CONSISTENCY THE ADDITION OF FLY ASH OR POZZOLANIC MATERIAL TO THE MIXTURE IN AMOUNTS NOT GREATER THAN 20–PERCENT (BY WEIGHT) OF CEMENT IN THE MIXTURE WILL BE PERMITTED.6.

NOZZLE OPERATOR QUALIFICATIONS: THE NOZZLE OPERATOR SHALL BE ABLE TO DOCUMENT A MINIMUM OF 300 HOURS OF EXPERIENCE AS A NOZZLE OPERATOR AND SHALL HAVE COMPLETED AT LEAST ONE (1) SIMILAR APPLICATION AS A NOZZLE OPERATOR, UNLESS OTHERWISE SPECIFIED.11.

PREPARATION OF SURFACES TO RECEIVE SHOTCRETE: ALL SURFACES SHALL BE MAINTAINED IN A MOISTENED CONDITION FOR THREE (3) HOURS BEFORE APPLICATION OF SHOTCRETE. ALL ICE, SNOW AND FROST SHALL BE REMOVED AND THE TEMPERATURE OF ALL SURFACES, TO BE IN CONTACT WITH THE NEW SHOTCRETE SHALL BE NO COLDER THAN 40O F.

CURING: THE CURING COMPOUND SHALL BE THOROUGHLY MIXED AND IMMEDIATELY APPLIED AND CONTINUOUSLY AGITATED DURING APPLICATION. IT SHALL BE APPLIED AT A UNIFORM RATE OF NOT LESS THAN ONE (1) GALLON PER 150 SQUARE FEET OF SURFACE FOR FLOAT FINISHES. CURING COMPOUND SHALL NOT CHECK, CRACK OR PEEL, AND SHALL BE FREE FROM PINHOLES OR OTHER IMPERFECTIONS.

ESTIMATED QUANTITY OF CONCRETE FOR SHOTCRETE REPAIR = 4.0 YDS.

PRESSURE GROUTING OF WALL INTERIOR

IT IS NOT THE INTENT OF GROUTING OF THE ANNULAR SPACES BETWEEN THE STONES WITHIN THE AREAS DELINEATED ON THE DRAWING TO FULLY GROUT THE GAP BETWEEN THE STONES. THE INTENT IS TO PICK SEVERAL LARGE OPENINGS WITHIN THE AREA AND PUMP GROUT INTO THE INTERIOR OF THE WALL TO TIE THE STONES WITHIN THE INTERIOR OF THE WALL TOGETHER. GROUT MIXTURE IS TO BE THICK IN ORDER TO NOT ALLOW A DISCHARGE INTO BLACKWATER CREEK.

GROUT MATERIALS

SAND IS TO BE WELL GRADED AND OF ROUNDED, NATURAL SHAPE. MANUFACTURED SANDS ARE NOT TO BE USED.

SAND		SUGGESTED MIXES / BAG OF CEMENT	
SIEVE SIZE	% PASSING	CEMENT	94 LBS
#4	100	GRADED MASONRY SAND	1.5 – 2 CF
#8	95–100	WATER	5 – 5.5 GALS
#16	70–100	BENTONITE	5 LBS PER 94 LBS OF CEMENT
#30	40–75	FLY ASH MAY BE USED IN AMOUNTS LESS THAN OR EQUAL TO 30% BY WEIGHT OF THE CEMENT	
#50	10–35		
#100	2–15		

GROUTING METHOD

ENSURE THE CANVAS OR BURLAP GROUT STOP IS IN PLACE DIRECTLY OVER THE AREA TO BE GROUTED AND EXTENDS SEVERAL FEET IN EACH DIRECTION. INSERT GROUT NOZZLE INTO DEEPEST AND WIDEST CAVITY WITHIN DEFINED AREA. BEGIN PUMPING GROUT WATCHING TO ENSURE GROUT DOES NOT FLOW OUT OF OPENINGS BELOW. SHOULD GROUT BEGIN TO FLOW OUT OF CREVICES BELOW, STUFF OPENINGS TIGHTLY WITH BURLAP USING WOOD STAKES OR METAL RAMMING DEVICES TO PUSH BURLAP INTO CREVICE. LEAVE IT IN PLACE WHEN GROUTING IS COMPLETE.

INJECT GROUT UNTIL OPERATOR CAN SEE IT IS APPROACHING THE SURFACE AND STOP BEFORE IT CAN FLOW OUT OF OPENING. MOVE ON TO THE NEXT LARGEST OPENING UNTIL AT LEAST 5 AREAS HAVE BEEN GROUTED IN EACH AREA AROUND A STUMP.

WHEN SEALING VERTICAL OPENINGS, SEAL CRACK BELOW BURLAP STOP WITH BURLAP AS DESCRIBED ABOVE BEFORE BEGINNING. WHEN GROUTING SEMI VERTICAL CRACKS, BEGIN AT THE BASE ABOVE THE WATER LINE AND ABOVE BURLAP STOP. INSTALLER MAY SKIP SECTIONS AS HE PROCEEDS AND RETURN TO THOSE AREAS ONCE INITIAL GROUT HAS REACHED INITIAL SET.

ESTIMATED QUANTITY OF GROUT MATERIALS TO GROUT EXISTING WALL = 10 YDS.

AT THE CONTRACTOR'S OPTION THE USE OF EITHER A MECHANICALLY POWERED OR HAND POWERED GROUT PUMP MAY BE USED TO INJECT GROUT INTO INTERIOR OF RETAINING WALL. CONSIDERATION MUST BE GIVEN TO THE POSSIBILITY OF OVER INJECTION USING A MECHANICALLY POWERED PUMP AND THE POSSIBLE CONTAMINATION OF THE WATERWAY BELOW WITH UNCURED GROUT. CONTRACTOR IS RESPONSIBLE FOR CONTAINING ANY SPILLAGE AND KEEPING THE WATERWAY FREE OF UNCURED GROUT. STATE ON YOUR BID FORM THE PROPOSED METHOD OF GROUT INJECTION.

FENCE SPECIFICATION

NEW FENCING TO MATCH EXISTING FENCE AND BE CONSTRUCTED OF COATED STEEL WIRE FABRIC AS DESCRIBED BELOW. FENCE HEIGHT TO BE 6'–0 ABOVE FINISH GRADE. RELOCATE AND REUSE EXISTING FENCE, GATES, POSTS AND HARDWARE WHERE CALLED FOR ON THE DRAWINGS. WHERE MATERIALS ARE DAMAGED DURING REMOVAL, REPLACE WITH NEW. CONTRACTOR SHALL USE EXTREME CARE IN REMOVAL OF EXISTING FENCE COMPONENTS SO AS TO PREVENT DAMAGE WHEN POSSIBLE TO THOSE COMPONENTS. NEW MATERIALS TO MEET THE FOLLOWING SPECIFICATIONS:

1. POLYMER COATED PIPE POSTS
   - A. POLYMER COATED PIPE: POLYMER COATED PIPE SHALL HAVE A POLYESTER COATING FUSED AND ADHERED TO THE EXTERIOR ZINC COATING OF THE GALVANIZED PIPE IN ACCORDANCE WITH ASTM F1043. THE MINIMUM THICKNESS OF THE PVC OR POLYOLEFIN COATING SHALL BE 10–MILS (0.254 MM). FOR POLYESTER 3 MILS (0.0076 MM). COLOR TO MATCH FABRIC – BLACK PER ASTM F934.
   - B. TERMINAL POSTS TO BE SCH 10 – 2½" DIAMETER STEEL PIPE
   - C. LINE POSTS TO BE SCH 10 – 1½" DIAMETER STEEL PIPE
   - D. FOUNDATION FOR POSTS TO BE MINIMUM 10" DIAMETER X 24" DEEP.
2. STEEL CHAIN LINK FABRIC
   - A. KNUCKLE EDGED, PVC COATED STEEL FABRIC: ASTM F668, 9 GAGE COATED STEEL CORE WIRE WITH A 2 INCH MESH, CLASS 2B FUSED AND ADHERED. COLOR: BLACK IN COMPLIANCE WITH ASTM F934
   - B. POLYMER COATED STEEL TENSION WIRE: 7 GAUGE (0.177 IN.) (4.50 MM) WIRE COMPLYING WITH ASTM F1664. WIRE GAUGE SPECIFIED IS THE CORE WIRE GAUGE. MATCH COATING CLASS AND COLOR TO THAT OF THE CHAIN LINK FABRIC: CLASS 2B, FUSED AND ADHERED
3. NEW GATE
   - A. NEW GATE TO BE 2'–8" WIDE (OUT TO OUT) X 5'–8 TALL (OUT TO OUT). MATERIALS TO COMPLY WITH ABOVE SPECIFICATIONS WITH 1½" DIAMETER PIPE RAILS AND HORIZONTALS. INFILL TO MATCH FABRIC AND BALANCE OF FENCE MATERIALS.
4. ADDITIONAL FENCE
   - A. AN ADDITIONAL 6'–0" OF FENCING PLUS ONE POST IS REQUIRED FOR THE UPSTREAM END OF THE PROJECT. ALL FENCING AT DOWNSTREAM END OF THE EXISTING SKATE PARK IS NEW.

TEMPORARY SEEDING SCHEDULE (TS)

PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPTEMBER 1 – FEBRUARY 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI–FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50–100
FEBRUARY 16 – APRIL 30	ANNUAL RYEGRASS (LOLIUM MULTI–FLORUM)	60–100
MAY 1 – AUGUST 31	GERMAN MILLET (SETARIA ITALICA)	50

PERMANENT SEEDING SCHEDULE (PS)

MINIMUM LAWN CARE	TOTAL POUNDS PER ACRE
COMMERCIAL OR RESIDENTIAL	175 – 200 LBS
KENTUCKY 31 OR TURF–TYPE TALL FESCUE	95 – 100%
IMPROVED PERENNIAL RYEGRASS	0 – 5%
KENTUCKY BLUE GRASS	0 – 5%
HIGH MAINTENANCE LAWN CARE	**200 – 250 LBS**
KENTUCKY 31 OR TURF–TYPE TALL FESCUE	100%
GENERAL SLOPE & ROAD SIDE DITCHES (3:1 OR LESS)	
KENTUCKY 31 FESCUE	128 LBS
RED TOP GRASS	2 LBS
SEASONAL NURSE CROP *	20 LBS
	150 LBS
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1)	
KENTUCKY 31 FESCUE	108 LBS
RED TOP GRASS	2 LBS
SEASONAL NURSE CROP *	20 LBS
CROWNVETCH **	20 LBS
	150 LBS

* USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW

FEBRUARY 16 – APRIL	ANNUAL RYE
MAY 1 – AUGUST 15	FOXTAIL MILLET
AUGUST 16 – OCTOBER	ANNUAL RYE
NOVEMBER – FEBRUARY 15	WINTER RYE

** SUBSTITUTE SERICEA LESPEDEZA FOR CROWNVETCH EAST OF FARMVILLE, VIRGINIA (MAY THROUGH SEPTEMBER USE HULLED SERICEA, ALL OTHER PERIODS USE UNHULLEDSERICEA). IF FLATPEA IS USED IN LIEU OF CROWNVETCH, INCREASE RATE TO 30 LBS./ACRE. ALL LEGUME SEED MUST BE PROPERLY INOCULATED. WEEPING LOVEGRASS MAY BE ADDED TO ANY SLOPE OR LOW–MAINTENANCE MIX DURING WARMER SEEDING PERIODS; ADD 10–20 LBS/ACRE IN MIXES.

LIME & FERTILIZER SPECIFICATIONS

LIME
PIEDMONT AND APPALACHIAN REGION:
2 TONS/ACRE PULVERIZED AGRICULTURAL GRADE LIMESTONE (90 LBS/1,000 SQ. FT.)
NOTE: AND AGRICULTURAL GRADE OF LIMESTONE SHOULD ALWAYS BE USED.

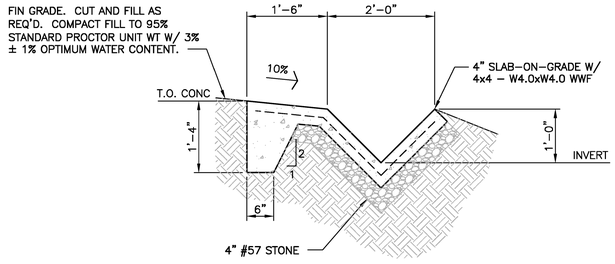
FERTILIZER
MIXED GRASSES AND LEGUMES:
1,000 LBS/ACRE 10–20–10 OR EQUIVALENT NUTRIENTS (23 LBS/1,000 SQ. FT.)

LEGUME STANDS ONLY:
1,000 LBS/ACRE 5–20–10 (23 LBS/1,000 SQ.FT) IS PREFERRED; HOWEVER, 1,000LBS/ACRE OF 10–20–10 OR EQUIVALENT MAY BE USED.

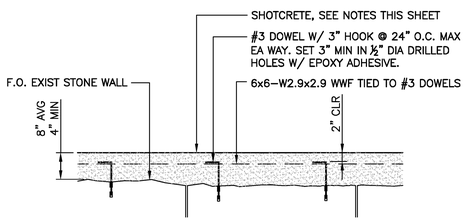
GRASS STANDS ONLY:
1,000 LBS/ACRE 10–21–10 OR EQUIVALENT NUTRIENTS, (23 LBS/1,000 SQ. FT.) OTHER FERTILIZER FORMULATIONS, INCLUDING SLOW–RELEASE SOURCES OF NITROGEN (PREFERRED FROM A WATER QUALITY STANDPOINT), MAY BE USED PROVIDED THEY CAN SUPPLY THE SAME AMOUNTS AND PROPORTIONS OF PLANT NUTRIENTS.

INCORPORATION
LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE TOP 4–6 INCHES OF SOIL BY DISCING OR OTHER MEANS WHENEVER POSSIBLE. FOR EROSION CONTROL, WHEN APPLYING LIME AND FERTILIZER WITH A HYDROSEEDER, APPLY TO A ROUGH, LOOSE SURFACE.

MULCHING
MULCH WITH STRAW AT A RATE OF 2 TONS/ACRE OR EQUIVALENT. STRAW SHALL BE FREE FROM WEEDS AND COARSE MATTER.
JOINT RESTRAINT (SEE CITY STD. DETAIL #26.04.02)

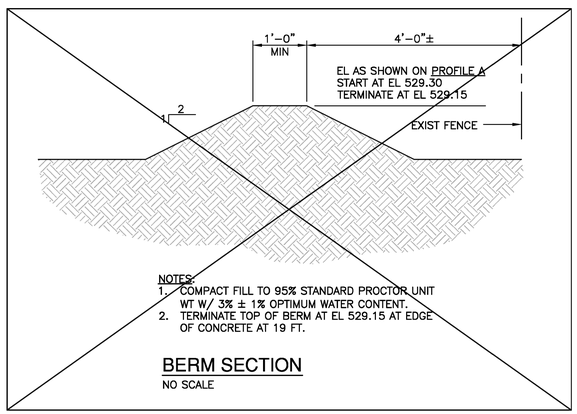


DETAIL - CONCRETE V-DITCH
NO SCALE



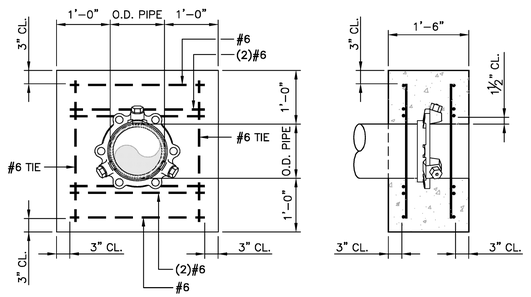
NOTE:
#3 DOWELS SHALL BE SET A MIN OF 3 INCHES FROM A BED JOINT, HEAD JOINT OR EDGE OF AN INDIVIDUAL STONE.

PLAN DETAIL - SHOTCRETE
NO SCALE



BERM SECTION
NO SCALE

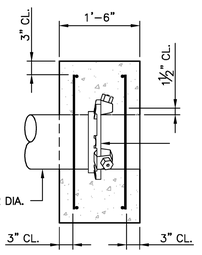
NOT USED



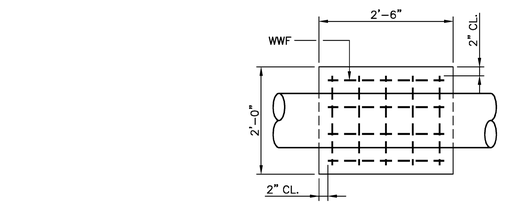
ELEVATION VIEW SIDE VIEW

DETAIL - HW-1 CONCRETE HEADWALL/ANCHOR
NO SCALE

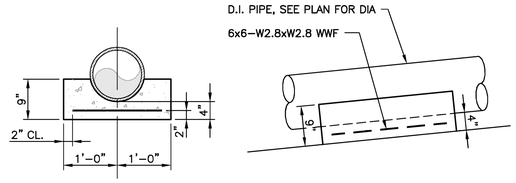
NOTES:
1. CONCRETE SHALL BE 3000 PSI.
2. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
3. PLACE THRUST COLLAR 9" FROM END OF PIPE.



TOP VIEW



TOP VIEW



FRONT VIEW SIDE VIEW

DETAIL -CONCRETE PIPE CRADLE
NO SCALE

REVISIONS
△ _____
△ _____
△ _____
△ _____

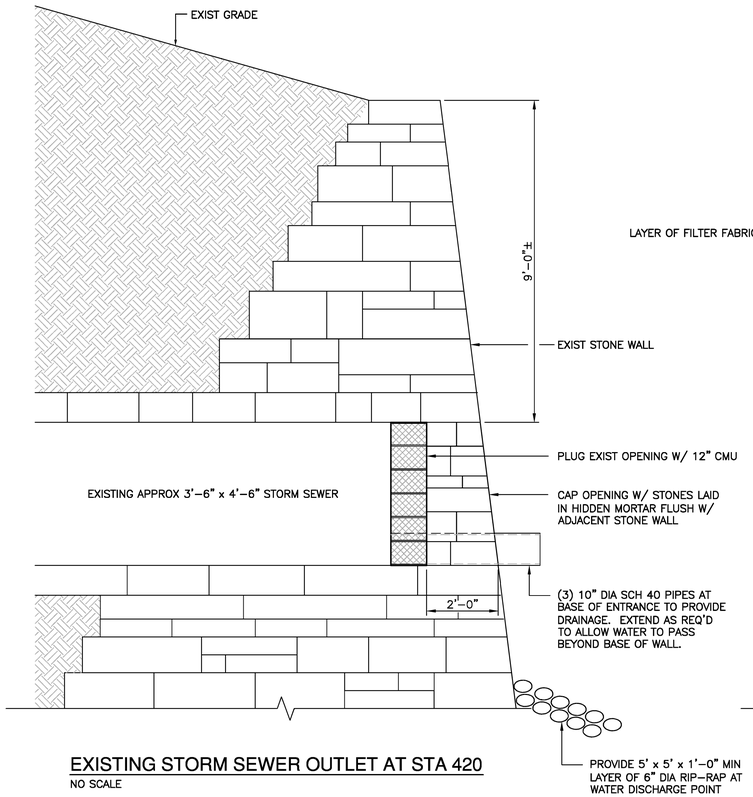
BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA
SPECIFICATIONS AND DETAILS

COMMONWEALTH OF VIRGINIA
NICK A. BRASH
NO. 015110
Feb 20, 2014
PROFESSIONAL ENGINEER

COMPREHENSIVE CONSTRUCTION SERVICES, INC.
1326 GRANDIN ROAD / P.O. BOX 4241
ROANOKE, VIRGINIA 24015
Ph: 540-344-3003
Fx: 540-344-3337

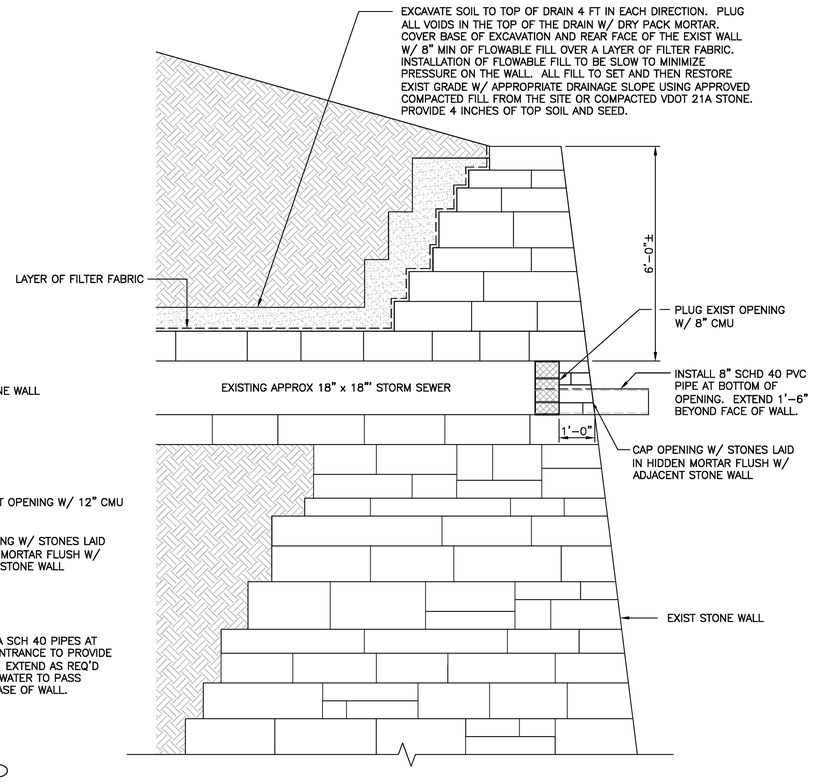
Construction Services Comprehensive Incorporated

DESIGNED	NAB
DRAWN	RWR
CHECKED	NAB
PROJECT NUMBER	13.043
DATE	2/20/14
SCALE	AS NOTED
CADD–FILE	
SHEET	C6



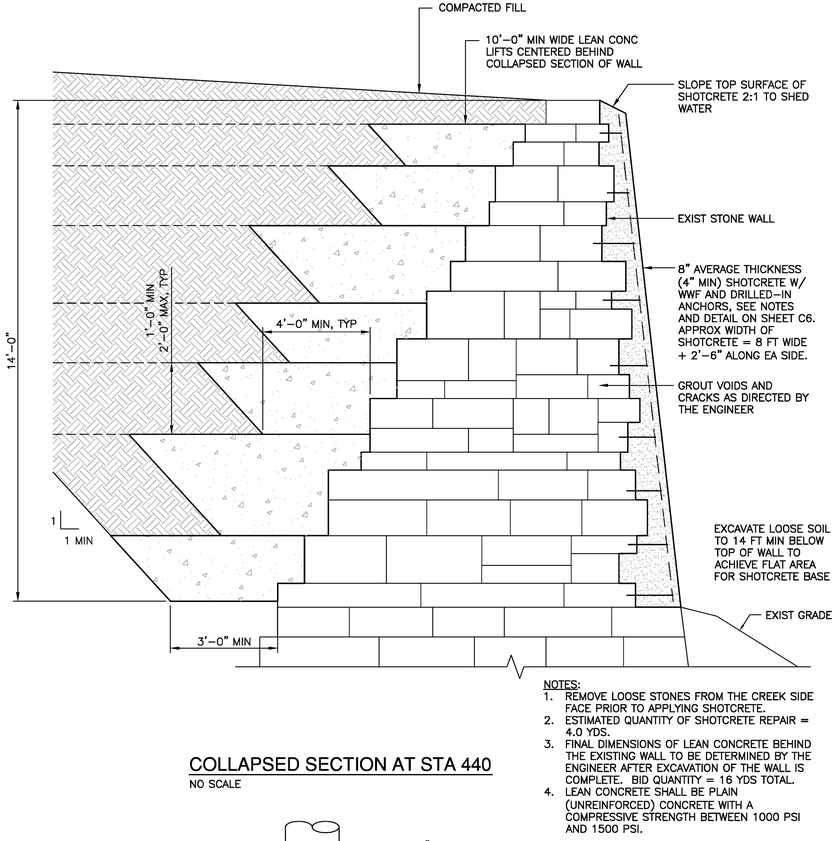
EXISTING STORM SEWER OUTLET AT STA 420

NO SCALE



EXISTING STORM SEWER OUTLET AT STA 150

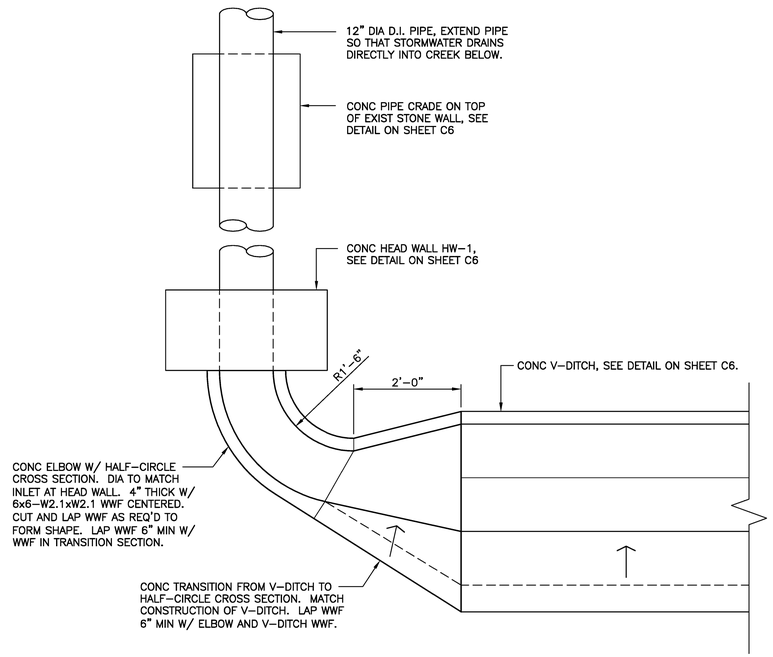
NO SCALE



COLLAPSED SECTION AT STA 440

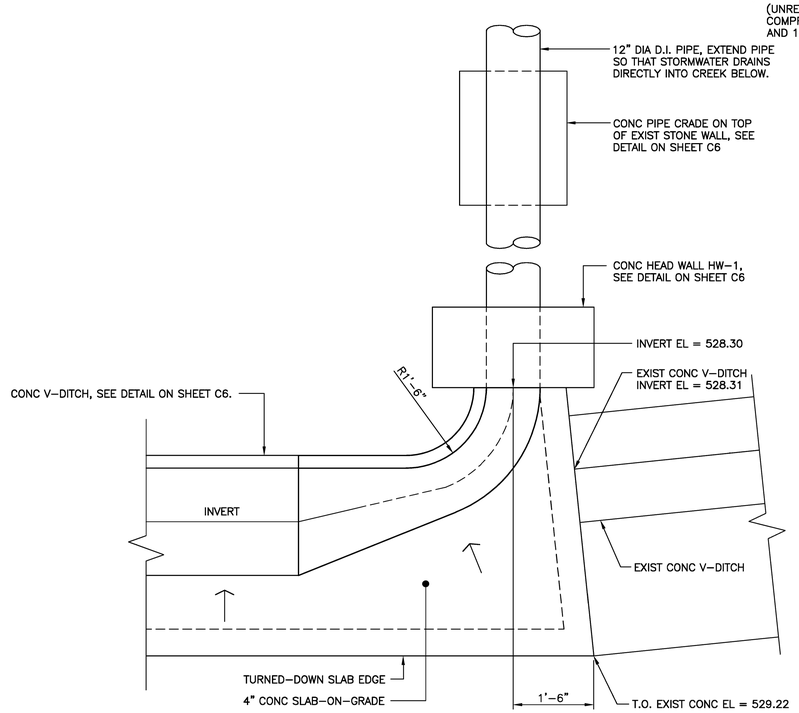
NO SCALE

NOTES:
1. REMOVE LOOSE STONES FROM THE CREEK SIDE FACE PRIOR TO APPLYING SHOTCRETE.
2. ESTIMATED QUANTITY OF SHOTCRETE REPAIR = 4.0 YDS.
3. FINAL DIMENSIONS OF LEAN CONCRETE BEHIND THE EXISTING WALL TO BE DETERMINED BY THE ENGINEER AFTER EXCAVATION OF THE WALL IS COMPLETE. BID QUANTITY = 16 YDS TOTAL.
4. LEAN CONCRETE SHALL BE PLAIN (UNREINFORCED) CONCRETE WITH A COMPRESSIVE STRENGTH BETWEEN 1000 PSI AND 1500 PSI.



DETAIL - UPSTREAM V-DITCH TO D.I. PIPE TRANSITION

NO SCALE



DETAIL - DOWNSTREAM V-DITCH TO D.I. PIPE TRANSITION

NO SCALE

REVISIONS

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA

DETAILS

COMMONWEALTH OF VIRGINIA
NICK A. BRASH
NO. 015110
Feb 20, 2014
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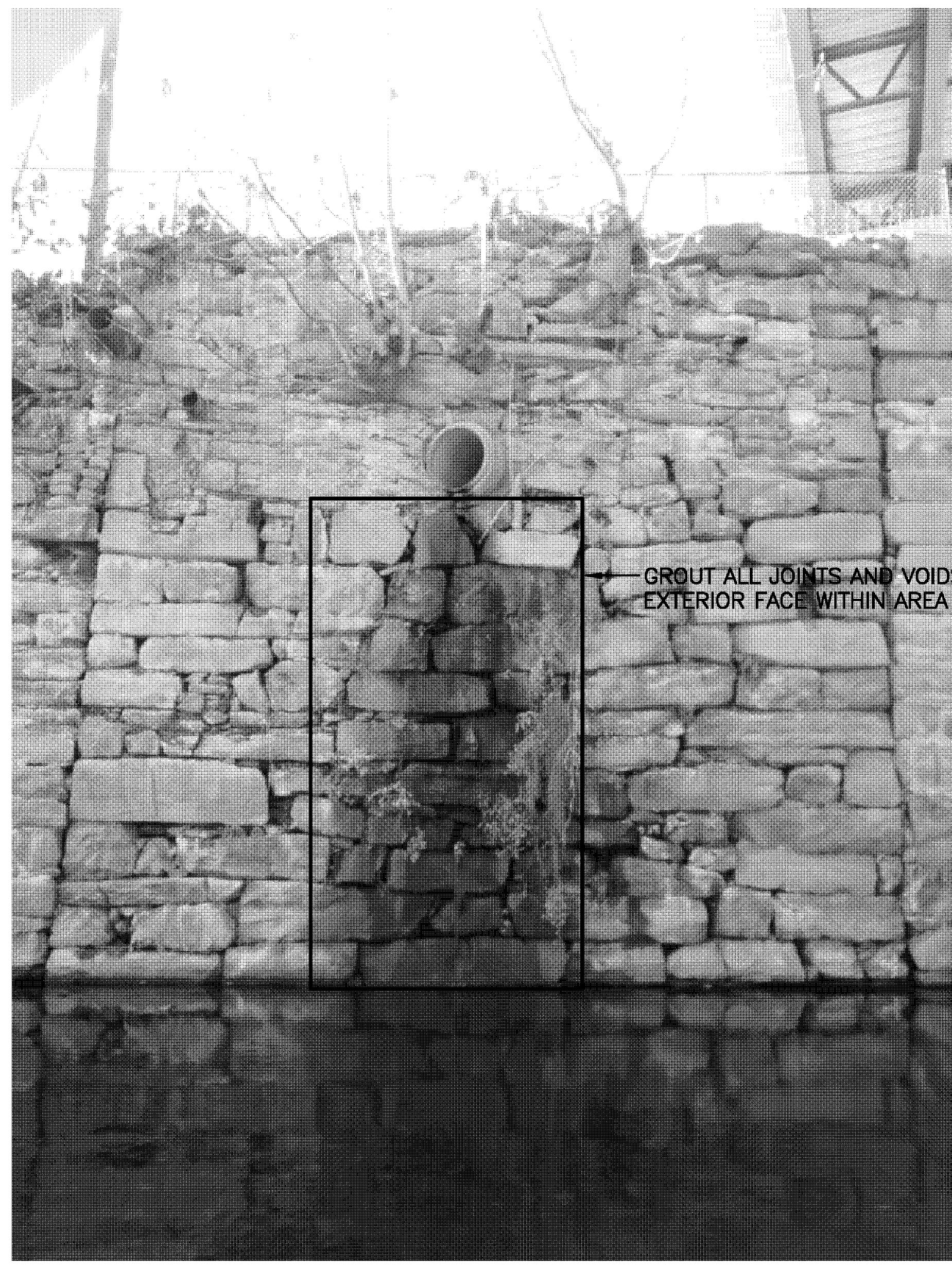
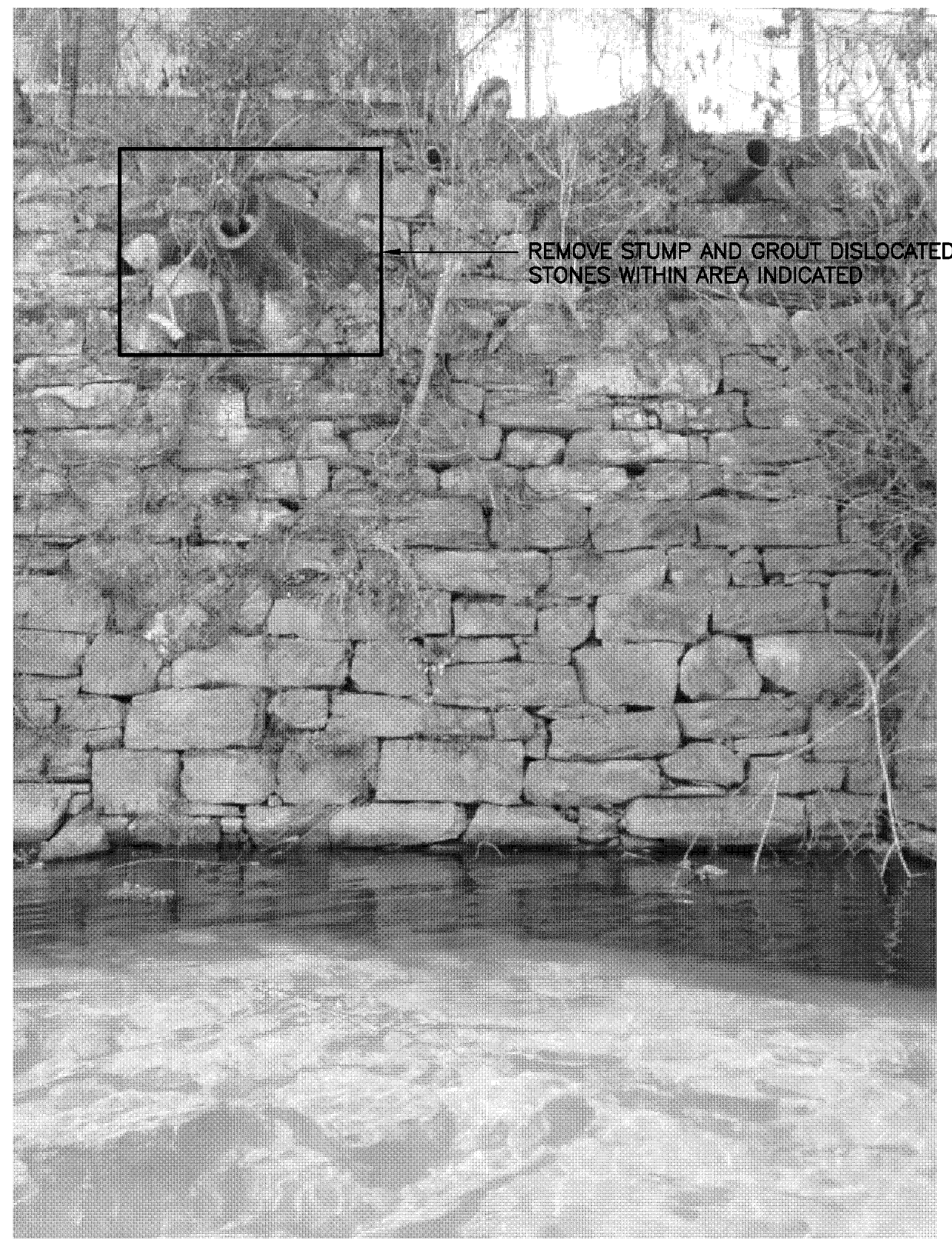
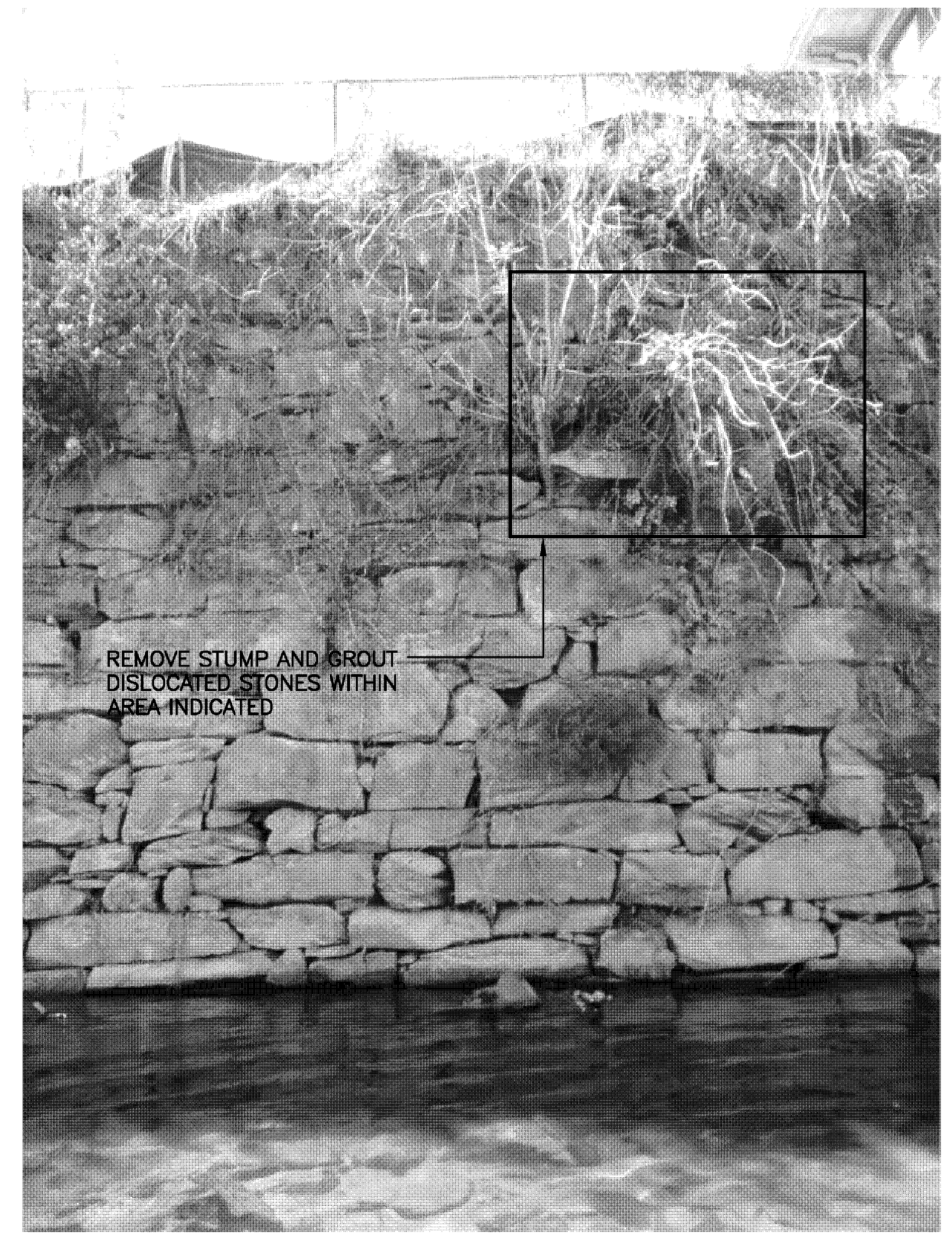
DESIGNED	NAB
DRAWN	RWR
CHECKED	NAB
PROJECT NUMBER	13.043
DATE	2/20/14
SCALE	AS NOTED
CADD-FILE	
SHEET	C7



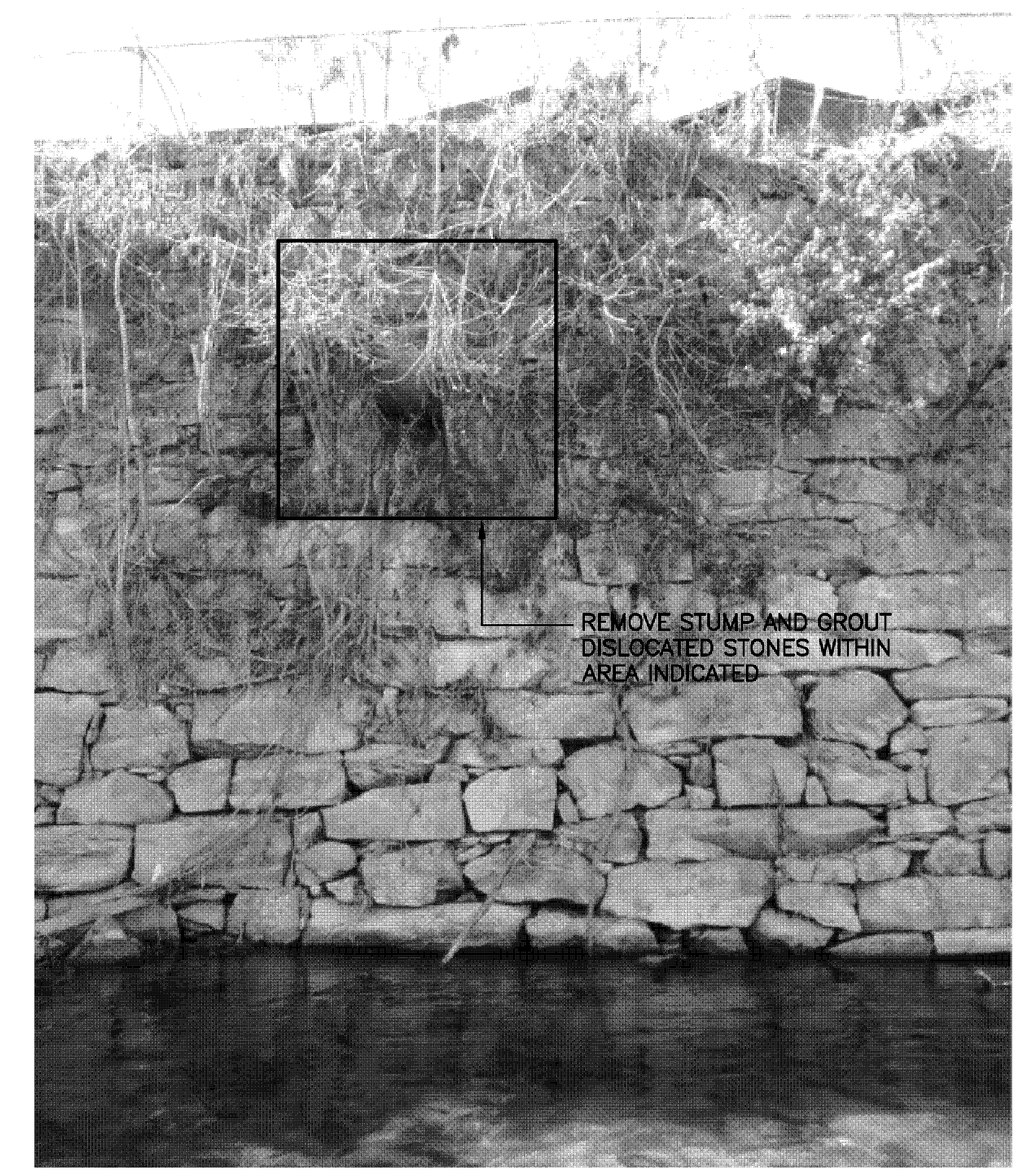
STA 0 - 20



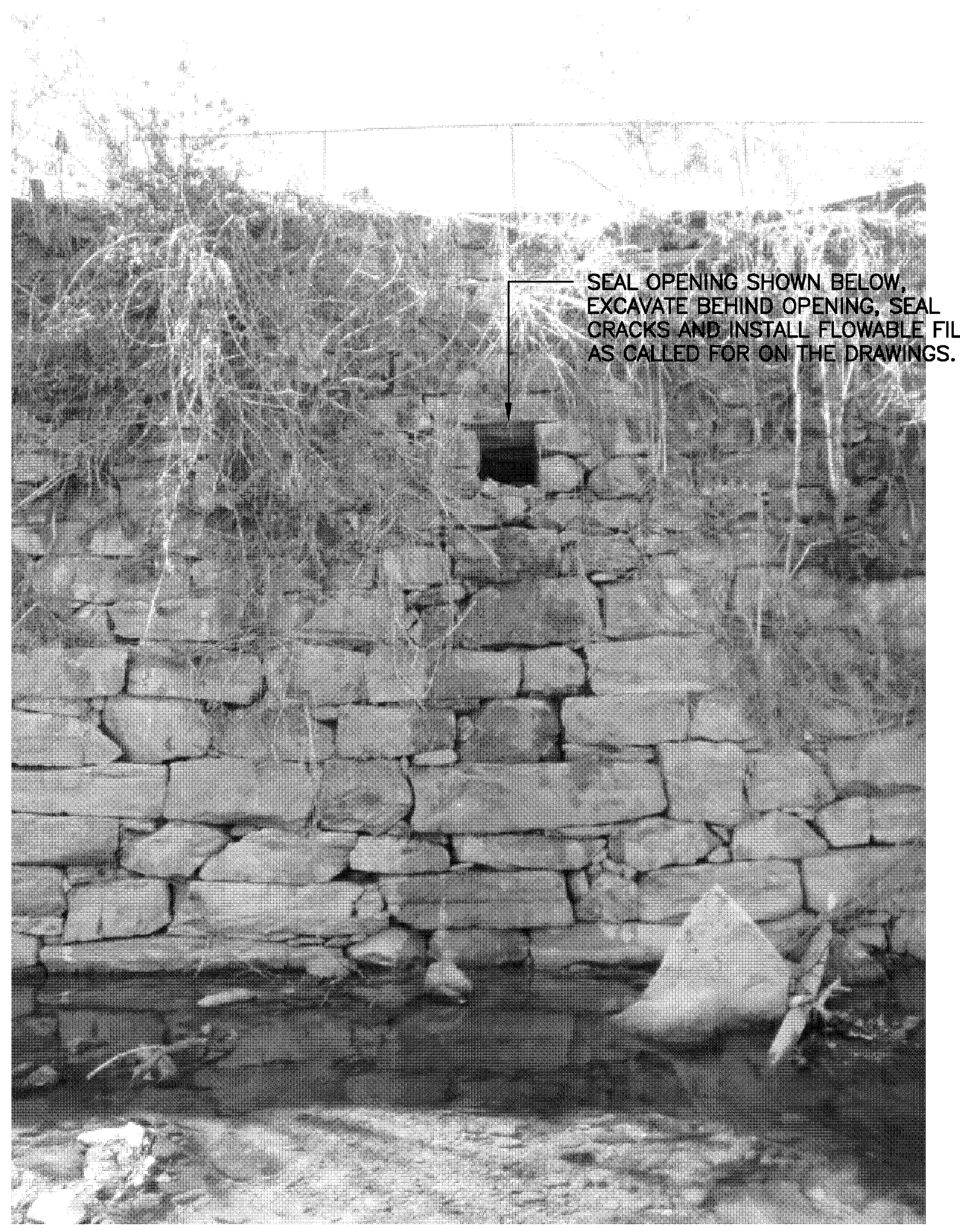
STA 40 -60



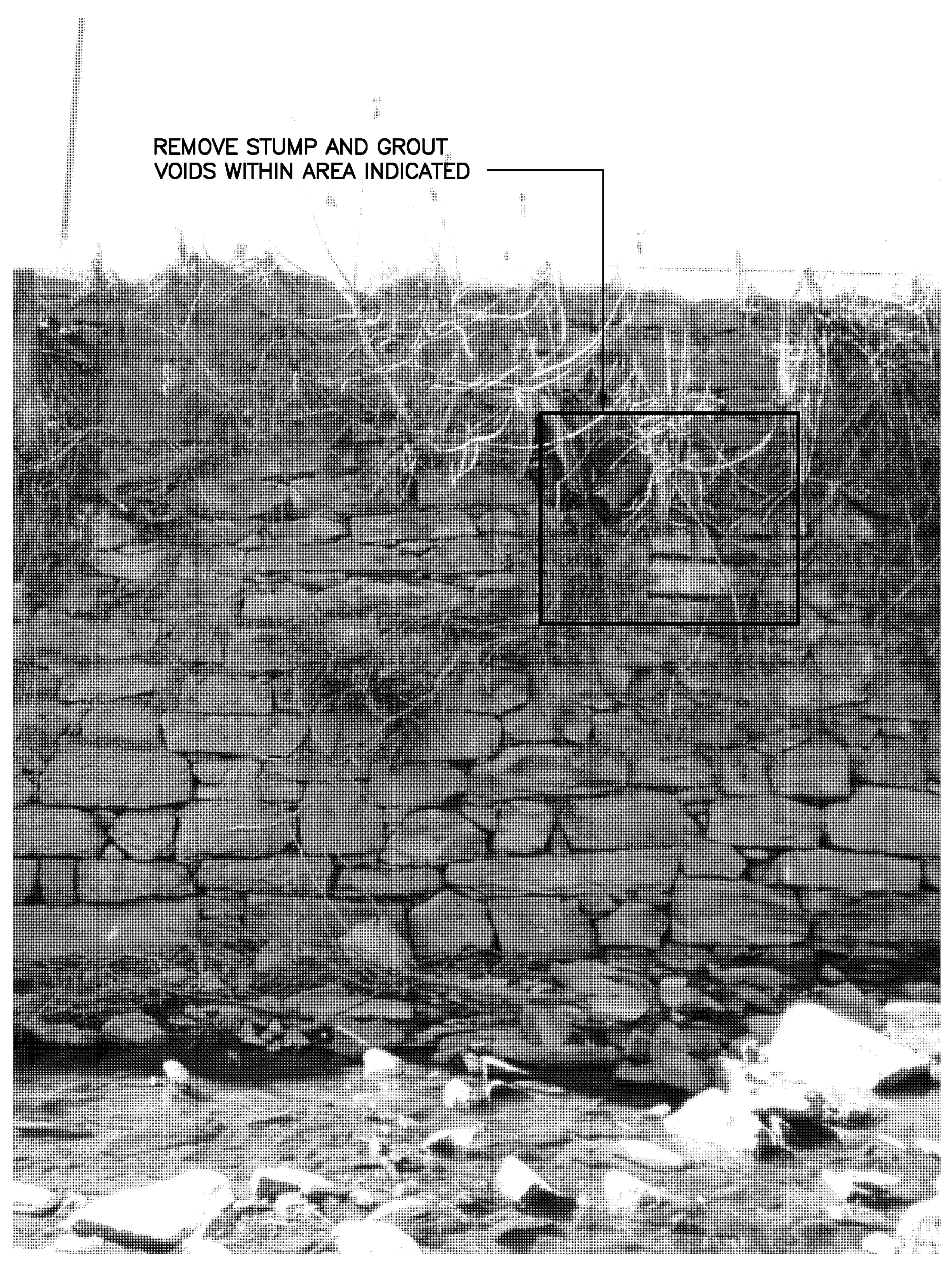
STA 100 - 120



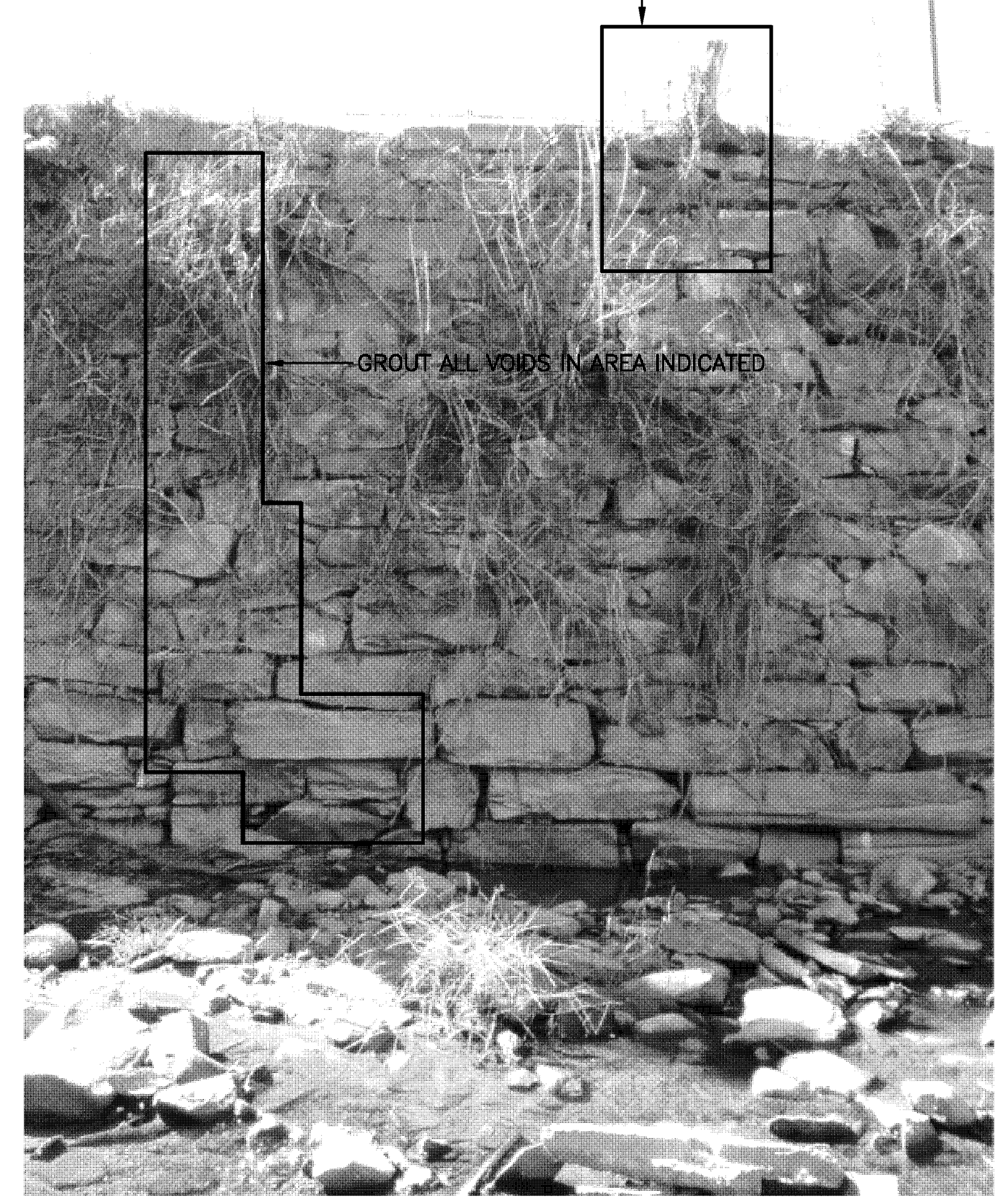
STA 120- 140



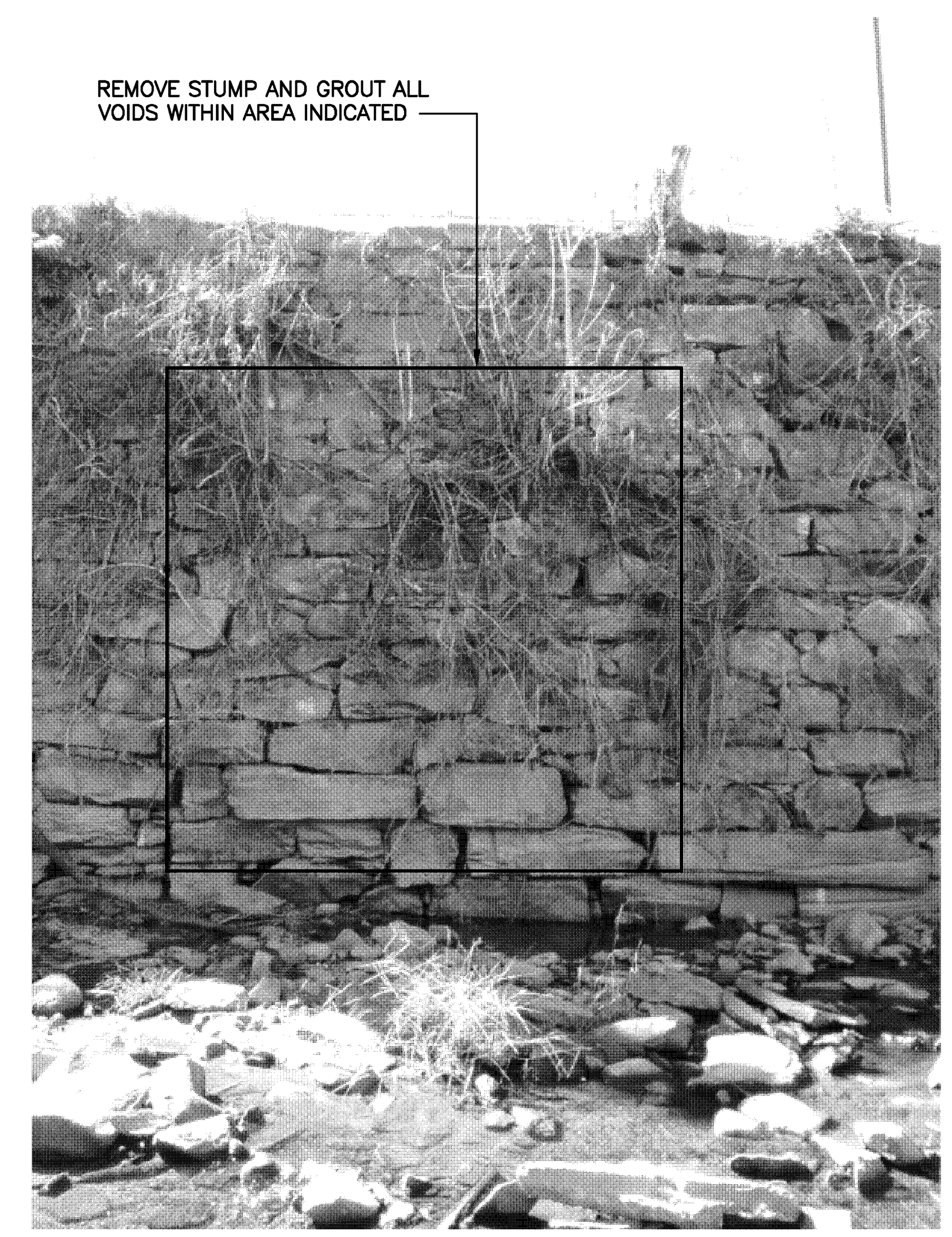
STA 140 - 160



STA 200 - 220



STA 220 - 240



STA 240 - 260

REVISIONS

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△
△
△

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA
PHOTOGRAPHS AND NOTES

COMMONWEALTH OF VIRGINIA
[illegible]
NICK A. BRASH
NO. 015110
Feb 20, 2014
PROFESSIONAL ENGINEER

COMPREHENSIVE
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SERVICES, INC.
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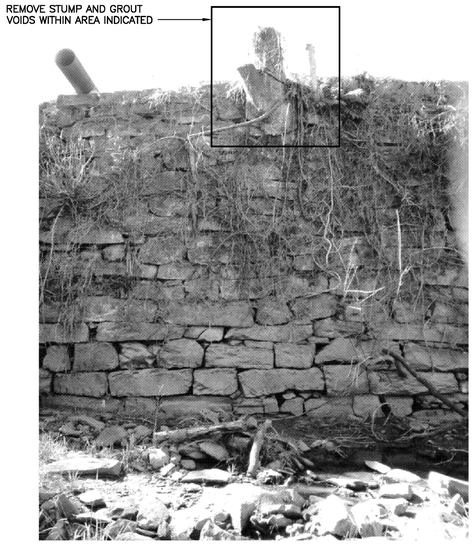
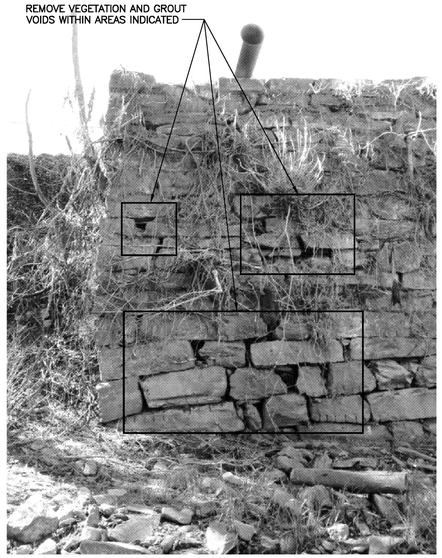
Ph: 540-344-3003
Fx: 540-344-3337

DESIGNED NAB
DRAWN RWR
CHECKED NAB
PROJECT NUMBER 13.043
DATE 2/20/14
SCALE AS NOTED
CADD-FILE
SHEET
C8



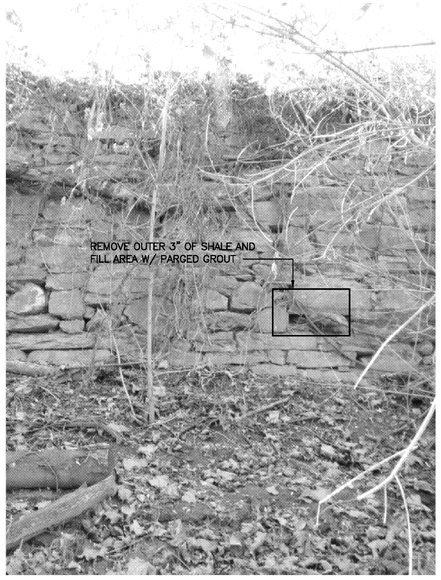
STA 260 - 280



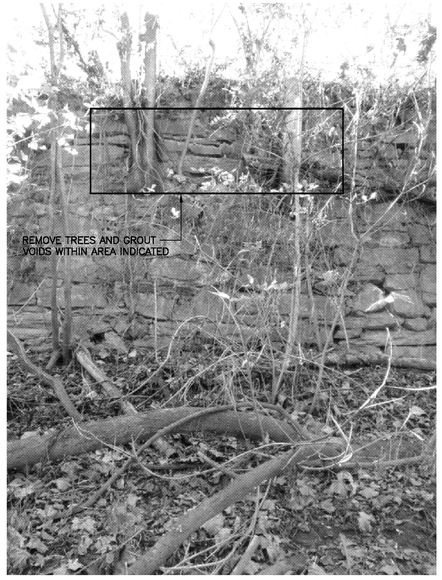
STA 280 - 300

STA 320 - 340

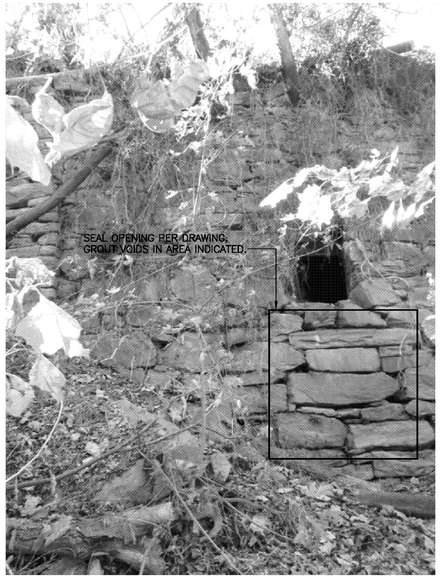
STA 340 - 360



STA 360 -380



STA 380 - 400



HOLE AT STA 440

COLLAPSE AT STA 440

REVISIONS

BLACKWATER CREEK RETAINING WALL
CITY OF LYNCHBURG, VIRGINIA
PHOTOGRAPHS AND NOTES

COMMONWEALTH OF VIRGINIA
NICK A. BRASH
NO. 015110
Feb 20, 2014
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Comprehensive Construction Services CCS Incorporated

DESIGNED NAB
DRAWN RWR
CHECKED NAB
PROJECT NUMBER 13.043
DATE 2/20/14
SCALE AS NOTED
CADD-FILE
SHEET C9